Hülya Şahin

Cross-linguistic influences: Dutch in contact with Papiamento and Turkish

Adopting the idea of bilingual optimization strategies and a usage-based framework, this dissertation explores contact-induced language change in Papiamento and Turkish in contact with Dutch and vice versa. Multilingualism is very important in our modern world and has been shown to have cognitive benefits. Psycholinguistic research indicates that the two languages of a bilingual speaker are jointly active and can influence each other during language processing. This can eventually lead to language convergence and change, which is often found to be the grammatical outcome of language contact in multilingual settings.

This dissertation is a collection of four studies which use several psycholinguistic and sociolinguistic research methods to investigate various aspects of contact-induced language change in the speech of Turkish-Dutch and Papiamento-Dutch bilinguals. It presents the first cross-linguistic study of structural linguistic changes in two minority languages in the Netherlands, and provides a link between sociolinguistic corpus-based research on how contact and change unfold, and psycholinguistic experimental research on the cognitive mechanisms that underlie this process. While combining corpus results with experimental validation is gaining the status of a methodological standard in Cognitive Linguistics, it is still relatively new in contact linguistics.
Cross-linguistic influences:
  Dutch in contact with
  Papiamento and Turkish
Cross-linguistic influences:

Dutch in contact with

Papiamento and Turkish

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Introduction: Multilingualism\(^1\) and cross-linguistic influence

Chapter 1

1.1. Introduction

The aim of the studies in this dissertation is to investigate contact-induced language change. Multilinguals are people who use more than one language in their daily lives. So let us start this introduction with an example of language convergence from my own experience as a Turkish Dutch bilingual speaker. In a recent conversation with a Turkish colleague I told her that I had been to see my GP:

\[
\text{Dün ev doktor-un-day-dt-m.} \\
\text{Yesterday house doctor-GEN-LOC-PAST-1SG} \\
\text{'I was at the GP yesterday.'}
\]

She started laughing and said: “Your Turkish is so funny.” I did not understand why she was laughing and felt offended. She said: “Hollanda da araba doktorunuz da var mı?” ‘Do you also have a ‘car doctor’ in Holland?’ It was then that I realized I was mixing my two languages. The Dutch word for the concept of family doctor is \textit{huisarts}, ‘house doctor’. In Turkish this concept does not exist. Turkish people who have lived in Holland for years and speak Dutch would not find \textit{ev doktoru} ‘house doctor’ funny, weird or unconventional. My utterance thus was an example of the creation of a bilingual speaker. The colleague who laughed does not speak Dutch and is not familiar with the compound \textit{huisarts} ‘GP’. In fact, I was not aware that my Dutch could influence my Turkish to this extent. The question is now whether the example above is evidence of a contact effect only in current speech, that is the result of momentary interference of a foreign system on the basically intact native system, an ‘incidental event’, or the reflection of language change that has already progressed to some extent and has led to ‘semantic shift’ in the bilingual mind. Given the fact that this compound is regularly found in the Turkish spoken corpus that features in this dissertation, and in personal interactions with Turkish speakers in the Netherlands, I will argue that it is an example of semantic shift and a linguistic phenomenon worthy of in-depth study.

\(^1\) The term multilingualism also refers to bilingualism in this thesis.
Multilingualism has become increasingly important in our modern world, due to easier contact through the internet, the global economic connections, modern transportation, etc. Multilingual data have also become much more accessible, a data-source that can be used very effectively to broaden our knowledge of language itself, language acquisition, language processing and cognition.

Multilingualism has been shown to have huge benefits. For example, multilingual speakers are less affected by aphasia and recover more quickly from brain lesions compared to monolingual speakers (Abutalebi & Green, 1998; Bialystok et al., 2009; Green, 2008, 2011). Linguists from different sub-disciplines have studied aspects of multilingualism (see for comprehensive overviews, Bhatia & Ritchie, 2004, 2008a, 2008b, 2013; Green & Abutalebi, 2011, 2013; Grosjean, 1998, 2001, 2008; Hernandez & MacWhinney, 2005; Hickey, 2010; Jarvis & Pavlenko, 2007; Kroll & De Groot, 2005; Pavlenko, 2011; Romaine, 1989). Studying multilingualism, from whatever perspective, inevitably brings us to the field of contact-induced language change. Multilingualism occurs when languages and therefore speakers are in contact. As has been repeatedly shown, languages influence each other, causing language change within a community or within an individual. One of the causes of language change therefore is contact between languages. A language can take over elements from another language that is spoken in the same area. Interestingly, this can be observed in real time language processing by individual speakers, and this psycholinguistic phenomenon can contribute to large-scale language change in a community. As many immigrant Turks are L2 learners of the other language, there is also influence from Turkish on Dutch, German, Danish etc. (see Becker & Carroll, 1997; Dicle, 2013; Schimke, 2009; Verhagen, 2009; and also the study reported on in Chapter 2). To find out the exact mechanism of language change, researchers must study not only the source language but also the target language, and the new variety that the speakers use. Often, changes do not occur in only one language but in both. Therefore, the bilingual speaker’s complete language repertoire needs to be studied. Precisely this is attempted in the first study in this dissertation, using several methods.

This dissertation is a collection of four studies I have carried out, using a range of methods to study various aspects of contact-induced language change in the language use of Dutch-Turkish and Dutch-Papiamento bilingual speakers. The languages studied, Papiamento and Turkish, are typologically very different from each other and from the third language in the comparison, Dutch. By investigating languages which are typologically very distant from one another the likelihood that the differences that are found between bilingual and monolingual speech are due to contact-induced language change may be higher.

The situations in which the languages are in contact also differ. Papiamento has 500 years of contact history with Dutch while Turkish-Dutch contact has only existed for the last 50 years. However, the linguistic outcomes of language contact
are sometimes very similar. I investigated language change in the area of case marking, specifically locative and accusative case marking and dative alternation. The aim of my study is to investigate language contact in individual speakers by means of a sociolinguistic corpus-based analysis and psycholinguistic experimental techniques. In doing so I want to provide a link between sociolinguistic research on contact and change and psycholinguistic research on the cognitive mechanisms that produce bilingual comprehension and production. The use of corpus results and experimental validation of these results is a new approach. The chapters in this dissertation report on an experimental priming study, a corpus study, a study using picture and movie clip descriptions, and a study using a judgment task.

Corpus-based sociolinguistic research, the method used most often in contact linguistics, has both pros and cons: corpus data are drawn from natural speech while speech is manipulated in experimental studies. However, while corpus analysis generates hypotheses about distribution of forms, it does not test hypotheses about cognition. Therefore, sociolinguistic studies are of limited use for cognitive models of bilingual language production. Meanwhile, in psycholinguistics, the main concern is the mind of the individual speaker, while group behavior is not investigated. For example, possible interference from Language A while a speaker produces a sentence in Language B is often studied using psycholinguistic experiments. Various researchers found such influence in bilingual speech, e.g. in structural priming studies (Bahtina-Jantsikene, 2013a, 2013b; Dijkstra, 2005, 2007; Kootstra et al., 2009, 2010; Kootstra, 2012; Weber & Indefrey, 2009).

In general behavioral tasks and the participant responses they elicit could be divided into three types: 1) language production such as picture naming, color naming, reading words aloud, writing; 2) language processing as in self-paced reading; 3) language classification as in lexical decision tasks, semantic categorization, or sentence matching. Using these methods, experimental studies enable researchers to test various hypotheses and to develop insights into the cognitive mechanisms of bilingual language processing (Gullberg, Indefrey & Muysken, 2009). These individual cognitive processes can serve as a starting point for studying contact induced language change. Furthermore, language change has not yet been studied much from a psycholinguistic perspective. The question is to what extent these individual processes explain aspects of contact induced language change.

I would like to end this introductory section by clarifying my personal perspective on contact-induced language change, taking into account my background as a Turkish speaking immigrant in the Netherlands. Within the field of contact linguistics, many scholars do not talk about language change in this setting but about language attrition or loss. This entails that an outside yardstick is taken, Standard Turkish or at least Turkish as spoken in Turkey, and the focus is on features of this variety that are not found anymore, or at a reduced rate, in the
immigrant speech. I have gone through the Dutch educational system as well as the Turkish one, and I am thus proficient in both Turkish and Dutch, proficient enough to qualify as a fluent speaker. I can detect new usage and understand the reasons behind it. From my perspective Dutch-Turkish does not reflect attrition but rather enrichment. Turkish has been enriched with the new features found in Dutch-Turkish. I am emotionally and professionally interested in Turkish, because I am a child of immigrants. That means I do not think that Turkey Turkish language norms and conventions should apply to all varieties. Dutch Turkish is a variety of Turkish that is still developing and is equal to Turkey Turkish. In my daily conversations I tend to use the new noun-verb fixed expressions such as piano oynuyorum ‘I am playing the piano’ instead of piano çalıyorum or tren alıyorum ‘I am getting on the train’ instead of trene biniyorum without any hesitation. And I would not be surprised to hear someone use these innovative fixed expressions/collocations, nor would I be prompted to take a corrective attitude. What is happening with Turkish in the current Dutch situation is not language attrition or language loss, but creation of a new language variety.

Furthermore, Grosjean (2008: 12) and Grosjean & Li (2013: 14) report on language mode and language activation, they argue that only one language is active at a time when speakers are in monolingual mode. As a multilingual speaker, the code-switching mechanism is an integral part of my daily language use and I experience my languages as always active at the same time. I am always in multilingual mode; it does not matter where I am, or with whom I am speaking.

1.2. Approaches to contact-induced change

As was already mentioned above, contact-induced language change has been analyzed from different perspectives. In this section, I will summarize these approaches as they are an important base on which previous studies rest and I used a number of them in my own work. I will discuss psycholinguistic approaches separately in Section 1.3 because three of my studies are of a psycholinguistic nature. Thus it deserves more in-depth explanation.

Historical linguistics is concerned with language development over time. Many studies in this area have been concerned with varieties of English, but other languages have been studied as well. The aim of historical linguistics is to find possible explanations of the nature and causes of language change. The causes of language change find their roots in the physiological and cognitive makeup of human beings (Bynon, 1977; Kiparsky, 1968). Historical linguists focus on the diachronic aspect of language change, i.e. change in the course of time and in different spaces (Janda & Joseph, 2003). Historical linguists make typological classifications of the structure of early languages and try to find the similarity between languages and language families. They study a specific language or
language family using old documents and books as data-sources. Obviously, they do not have access to actual language use. Nevertheless, without research in historical linguistics the different variations of a specific language change in the course of time would not be known to us. One of the well known examples is the change in the use of the Dutch old dative suffix -en (Booij, 2009). Another example is the word order change in English; before the 15th century, English had OV word order, nowadays English has VO word order (Komen, 2013: 48) and it changed from a synthetic to an analytic language.

Structural linguistics traditionally deals with synchronic aspects of language rather than diachronic ones. According to De Saussure (Allan, 2003; Bloomfield, 1933; Chomsky, 1964, 1965; Matthews, 2001; Peregrin, 1995), language is a tight system, with structures serving to link thought and sound. Structural linguists analyze language on the basis of its structure, as reflected by small units, bundles of phonological, morphological, syntactic, and semantic features. Boas, Sapir, Bloomfield and Chomsky followed De Saussure’s structural approach and continued to work on language structures and developing new models of language (Matthews, 2001; Peregrin, 1995). Many current schools of sociolinguistics and psycholinguistics have their roots in structural linguistics. An offshoot of structural linguistics is generative linguistics. One of the leading scholars in this field is Chomsky. He introduced the concept of innate linguistic knowledge, meaning that every human is born with an innate ability to learn language, and that learning is facilitated by the fact that all languages follow the blueprint of Universal Grammar. Most studies of second language acquisition (SLA) are carried out from a psycholinguistic perspective but because their roots often lie in the Chomskyan theory, they often make a strict distinction between lexicon and syntax, and are mainly concerned with the speakers’ individual knowledge, while ignoring the impact of the speech community (Backus, 2007, 2009, 2010, 2012, 2013a; Kerswill, 1994, 2002, 2013). Thanks to theoretical or structural linguistic research we know which kinds of linguistic structures or patterns are more or less immune to change. For example, case marking is considered to be a robust element that does not really change in contact situations (Thomason, 2001). In contrast to historical linguists, structural or theoretical linguists can ask speakers what they know about the language. There is direct access to actual language use. As Backus (2012) points out, to understand change, one needs the results of both fields. In order to understand synchronic language use, one must also look at diachronic aspects of language change.

Sociolinguists are concerned with the relationship between a language and its social circumstances. They study languages in their environment and consider the speech community to be an important factor that shapes language. In a recent overview on language contact, Muysken (2010) argues that “languages do not exist in an ecological vacuum”, meaning that language change occurs in socio-cultural
contexts. One should be aware of these social contexts and take an individual’s circumstances into account when studying the different features of language contact situations. While this is common practice amongst sociolinguists, this is not necessarily the case in the other disciplines. Sociolinguistic studies focus on the understanding of humans as social beings. In sociolinguistics, societal aspects such as in-group and out-group language use or the prestige of a language play an important role in the analysis of linguistic behavior. Classic sociolinguistic research has mostly used corpus data gathered from individual or group interviews, questionnaires and surveys (see for overviews of sociolinguistic perspectives on language Ball, 2009; Mesthrie, 2011; Wodak, Johnstone & Kerswill, 2011). Important contributions in sociolinguistic studies include Aikhenvald (2002, 2010); Aikhenvald & Dixon (2001); Dixon & Aikhenvald (2006); Heine & Kuteva (2005); Labov (1963, 1972, 1994, 2001); Matras (2009, 2010); Matras & Sakel (2007); Milroy & Gordon (2003); Myers-Scotton, (2002); Silva-Corvalán, (1994); Thomason (2000, 2001); Thomason & Kaufman (1988); Trudgill (1986); Weinreich, Labov & Herzog (1968). Without sociolinguistic studies we would not know much about what determines the linguistic behavior of a speaker in spontaneous conversation, specifically about the social factors and speaker-specific factors that determine or cause change. Compatible with sociolinguistics are the relatively new usage-based models of language. Usage-based models do not make a strict distinction between linguistic elements such as morphology lexicon and syntax, whereas linguists in general study these elements as separate units. Usage-based models cast doubt on the separation between lexicon and syntax, and provide the alternative view that the whole language repertoire is a continuum from lexicon to syntax, see Figure 1, a representation of the various units involved in the utterance ‘The teacher said ‘good morning’ (cf. Backus, Doğruöz & Heine, 2011; Croft, 2000, 2001; Doğruöz & Backus, 2007, 2009, 2010; Doğruöz & Gries, 2012; Gries, 2005; Verschik, 2008).

Maximally specific                  Partially schematic               Maximally schematic

Lexicon                           Syntax

[Good morning]                    [GoodN], [TheN],                   [S V NP],
[The teacher said]                [The teacher V],                   [Det N]

Figure 1: Adapted from Doğruöz & Backus, 2009: The representation of the constructional schemacity on the Specificity Continuum.
In usage-based linguistics the assumption is that there is a link between the frequency of an element and its entrenchment, and these two aspects should be studied in combination (Backus, 2005, 2010, 2013a, 2013b, 2014; Beckner et al., 2009; Bybee, 2006; Bybee & Beckner, 2010; Croft, 2000, 2001; Goldberg, 2006; Langacker, 1987, 2008; Tomasello, 2003). Frequency is of interest in my studies too, though some of the data have been collected using experimental methods: Some of the results reflect the effects of frequency.

Backus (2010) points out that linguists in general tend to separate synchronic language use and diachronic language change. Contact-induced language change is a process with two poles, a ‘starting point’ and an ‘end point’. An example of a starting point is when *piano oynamak* ‘play the piano’ is produced instead of *piyano çalmak* by one Turkish-Dutch bilingual speaker for the first time. At the end point, this same collocation enjoys high entrenchment for the speakers in a community as they all frequently use the new form (Borbély, 2005). Croft (2010) uses the term ‘innovation’ for the ‘starting point’ and ‘propagation’ for the process that leads to the ‘end point’. Both terms make reference to synchronic and diachronic aspects.

Having discussed the four important linguistic approaches to language contact, I will now discuss Muysken’s proposal to better integrate them (Muysken, 1984). Language contact phenomena as exhibited in the speech of individual speakers are not only interesting as a starting point for theories regarding the cognitive basis of language, in particular of multilingualism, but also for investigating basic mechanisms of contact induced language change. Languages are always prone to change. In monolingual contexts the changes can occur due to language internal developments such as the emergence of new words for new concepts. In bilingual contexts changes can occur through both internal and external developments. Such changes occur on the lexical level, but also on syntactic and semantic levels due to cross-linguistic influences from language A to language B or vice versa.

Although different disciplines offer different observations and explanations of what language contact is, according to Muysken (1984), the domains of language contact are tightly connected within the three research traditions of linguistics, sociology and psychology. Figure 2 depicts the three different disciplines of Muysken’s Triangle.
Figure 2: Links between the subfields as presented in Muysken (1984).

It stands to reason that research traditions share some common ground. When it comes to linguistics, Muysken (1984) has designed a comprehensive diagram, to illustrate the inter-connection between the related fields. As depicted in Figure 2, the three main disciplines in Muysken’s triangle – sociology, psychology, and linguistics – are inter-connected on multiple levels. You may note that Muysken draws some links with double lines, which represent a stronger interaction between the respective fields, as opposed to the links that are depicted with single lines. Also, the triangle shows that the research focus in these three main fields concerns several other aspects of language and the interaction of languages, including monolingual and bilingual language processing. In sociolinguistic studies, research is mainly focused on the social process and the social organization of perception through language use. Psycholinguistic studies are concerned with the cognitive, or mental, process in individual speakers. In general linguistics, a lot of the research involves typology and semantics of individual languages. Of course, the inter-connection between the three main disciplines in Muysken’s triangle is indicative of overlap
between these fields. At present, the fields within the diagram still reflect a somewhat chaotic combination of concepts from different disciplines. In summary, Muysken showed that there was little collaboration amongst the three research traditions.

In more recent work Muysken (2013) proposed a “quadrangle model” for the explanation of language-contact phenomena across different domains and the interaction of languages in bilingual individuals. In this framework, Muysken describes the following four “Bilingual Optimization Strategies” which form the four poles of this quadrangle model:

a. An L1-type speaker will maximize the structural coherence of her first language,
b. An L2-type speaker will maximize the structural coherence of her second language,
c. An L1/L2-type speaker will match between L1 and L2 patterns where possible,
d. A UP-type speaker will rely on universal principles of language processing.

The “Bilingual Optimization Strategies” are seen as choices that bilingual speakers make, individually and collectively, and that are influenced by multiple social, individual, and linguistic factors. Muysken (2013a) describes his model as follows:

“… a comprehensive framework for modeling and interpreting language contact phenomena, with speakers’ bilingual strategies in specific scenarios of language contact as its point of departure. Bilingual strategies are conditioned by social factors, processing constraints of speakers’ bilingual competence, and perceived language distance. Different language contact outcomes correspond to different interactions of these strategies in bilingual speakers and their community.” (Muysken, 2013a: 709).

According to Muysken (2013a), the L1-type is favored by speakers who are dominant in their first language. In opposition, the L2-type is favored by speakers who are dominant in their second language. The L1/L2-type is favored by speakers for whom language dominancy does not play a role and for linguistic patterns common to the two languages, while the UP-type is favored by speakers, when the linguistic patterns are not common to the two languages.

In the second chapter (The expression of spatial relationships in Turkish/Dutch bilinguals) of this dissertation, this picture of “Bilingual Optimization Strategies” is adopted and tested. Furthermore, in Chapter 6 (general conclusion) the outcomes of all three studies are discussed in the light of Muysken’s “quadrangle model”.

1.3. Psycholinguistics: experimental approaches

In my dissertation I will attempt to bridge the gap between psycholinguistics and sociolinguistics, adopting a usage-based perspective. Three of the four studies in this dissertation are conducted from a psycholinguistic perspective, which is why this perspective will be outlined more elaborately in this section. Psycholinguistic studies investigate the speakers’ language processing using lab-based experiments, but they all face the challenge that experimental settings can be far removed from real life language experience (Levelt, 2013).

Language convergence results from the interaction between two languages and occurs in bilingual settings. Language convergence is contact-induced change: bilingual speakers borrow morphological and/or syntactic features from language X and use these features in language Y. This transfer can sometimes create a shift in a conceptual domain Language convergence and shift of a conceptual domain are described by Pavlenko:

Figure 3: Adapted from Muysken, 2013a: Schematic representation of factors influencing the four options.
“Convergence, whereby a unitary domain is created, distinct from both L1 and L2; Shift from a L1 to an L2 conceptual domain which may be evidence as shift of category prototypes and or category boundaries” (Pavlenko, 1999: 219).

In a similar fashion, Ameel defines convergence as a process that occurs in language contact situations when languages influence each other over time. She further explains that language convergence implies a positive change:

“... convergence makes a bilingual’s two languages different from both as spoken by monolinguals, but it leaves the bilingual no less expressive or proficient a language user” (Ameel et al., 2009: 271).

Pavlenko and Ameel assume that there are cross-linguistic influences from the source language (L1) on the target language (L2) or vice versa in bilingual speech. This cross-linguistic transfer may be bidirectional (cf. Brown, 2007; Brown & Gullberg, 2008, 2011).

Research on language convergence in second language acquisition contexts includes studies in various domains, such as colour terms (Ervin-Tripp, 1961), object naming (Ameel et al., 2005, 2009; Ameel, Malt & Storms, 2008), tense/aspect/mood marking in oral narratives (Pavlenko & Jarvis, 2002), adposition usage (Becker & Carroll, 1997), bidirectional transfer in speech and gesture (Brown & Gullberg, 2008, 2011), reference to emotion terms (Pavlenko & Jarvis, 2002), and spatial reference (Jarvis & Odlin, 2000).

In an early study, Ervin-Tripp (1961) compared colour categories of Navaho and English monolinguals, and Navaho-English bilingual speakers. She first established differences in colour categorisation between Navaho monolinguals and English monolinguals, and then divided the bilinguals in two groups: Navaho dominant speakers and English dominant speakers. Ervin-Tripp found that monolinguals draw different category boundaries from bilinguals. For example, English monolinguals categorise blue, green and purple into separate categories, while Navaho monolinguals include all of them into the same dotLqich category. Bilinguals differed also in their categorization of green and yellow.

In a more recent study, Ameel et al. (2005) investigated semantic convergence in the bilingual lexicon. They examined whether semantic categorisation is different between mono- and bilingual speakers when naming house-hold objects. They were interested in how bilingual speakers deal with category discrepancies, and focused particularly on speakers’ treatment of items in a category-centre and items in a category-boundary. Participants were asked to rate whether a picture was a typical member of a given linguistic category or not, and to decide whether and object was a typical member of a category or not. The results show that the bilingual participants rated objects differently than the monolinguals. They found that the correlations
between the Dutch and French so called ‘typicality ratings’ of bilingual speakers were higher than the ‘typicality ratings’ of Dutch and French monolingual speakers.

There is also evidence of convergence and bidirectional transfer in gesture studies. Brown & Gullberg (2008) studied convergence in word choice and gesture in speech production. They examined speech and gesture patterns in monolingual Japanese and English speakers and native Japanese speakers with intermediate knowledge of L2 English. They found convergence and bidirectional transfer between the L1 and L2 linguistic systems of the intermediate proficient bilingual speakers. They found differences between Japanese/English bilingual speakers and monolingual English speakers in encoding manner of motion, but not between Japanese learners and Japanese monolinguals. The same result was found in encoding manner of motion in gesture; bilinguals differed from monolingual English speakers, but not from monolingual Japanese. Japanese learners of English encode manner of motion in English speech but do not use English-based gestures (Brown & Gullberg, 2008).

Pavlenko and Jarvis (2002) studied bidirectional transfer in the oral narratives of Russian L2 speakers of English. The data was collected in Russian and in English, from Russian adult speakers, who were asked to retell four short silent films in both their languages (Pavlenko & Jarvis, 2002). Bidirectional transfer was divided into two main categories: “paradigmatic relations” (exclusive linguistic units which are members of definable categories) and “syntagmatic relations” (linearly ordered combinations of linguistic units). In the paradigmatic category they found bidirectional influence in “Framing transfer” and “Semantic extension”. They also found differences when describing or referring to emotions, which may occur, according to them, because English categorizes emotions as states, while Russian treats emotions as processes.

Jarvis and Odlin (2000) studied language transfer in spatial reference by Finnish and Swedish speakers acquiring English. Similar to the study of Pavlenko and Jarvis (2002), data was collected using silent film stimuli. However, the participants were asked to write a narrative about the movie after watching it instead of giving an oral narrative. Finnish and Swedish were chosen because the two languages differ in their patterns of spatial reference. Finnish has extensive bound agglutinative morphology and uses suffixes and postpositions to express spatial relationships, much like Turkish. Swedish, on the other hand, has little bound prepositional morphology and uses free prepositions to express spatial relationships, much like Dutch. Jarvis and Odlin found influence of Swedish (L1) and Finnish (L1) on English (L2), and vice versa. The language transfer that was found showed different patterns for Swedish and Finnish.

All the studies described above were conducted in an experimental setting and they show that the languages of a bilingual speaker are interactive and can influence each other. Although the experiments do not resemble the real-life experience of a
bilingual speaker perfectly, they do reflect on-line linguistic behavior. In the work reported on in this dissertation, I try to combine the research methods of linguistics, sociology and psychology. Although I find myself in agreement with almost every aspect of the sociolinguistic approach, especially usage-based approaches, one of my concerns is that there is a tendency to only study a singular target language. I perceive this approach not to be complete enough in order to seek generalizations about cross-linguistic influence. I believe we need to study both languages spoken by the bilingual speaker in a multilingual interactive context. A particular advantage of the psycholinguistic approach illustrated in the present section is that it makes no principled distinction between the languages spoken by the speaker as to the direction of the influence.

1. 4. Brief descriptions of the languages and speech communities

Turkish

The Turkish community

I will start this section with the story of my father, which is typical of immigrant workers, or gastarbeiders ‘guest workers’. My father came to the Netherlands in 1966, when he was 30 years old, worked in the mines in Limburg and in the Heineken beer factory. He was to stay for at most three years but in the end he returned to Turkey at the age of 59 in the cargo of an airplane. He could not accomplish his dreams. All his friends had the same dream: work for a couple of years, make money and return to your home country. They ended up staying, and their children were born in the Netherlands or immigrated too at a very young age. Migration from Turkey started in the sixties. Now, after almost 50 years there is a large Turkish community in the Netherlands. It represents 2% of the population, a total number of 395,302 people of Turkish origin legally living in the Netherlands (CBS 2014). Some of these are third generation Turkish immigrants, although they are not called gastarbeiders anymore, and they do not regard themselves as guests. The high vitality of Turkish is, among other reasons, due to regular visits to Turkey, Turkish satellite channels and internet. I had to translate every letter that my father and mother got from state institutions, assist as a translator during GP visits, etc. But I do not need a translator in my daily life, my daughter who was born here does not need to translate for me, yet she still does it for my mother. In short, the first generation speakers’ knowledge of Dutch was basic, but second generations speakers were born here or came through family reunifications in the 1970’s and went to Dutch schools and third generation speakers were born and raised here. They use and invented the innovative forms studied in this dissertation. They are fluent Dutch speakers and have also maintained their Turkish. Studies on Turkish in the Netherlands have mostly been done on various aspects of the language.

Turkish in the Netherlands shows strong internal cohesion and relatively high language maintenance, also thanks to a low rate of intermarriage. Although it is often emphasized that intermarriages with different ethnicities are rare within the Turkish community, they are more common than is often thought, particularly in recent times.

Much of the work in the field of Turkish Dutch language contact focuses on the Turkish spoken by Turkish adolescents and adults, particularly on code-switching, borrowing, loan translation and grammatical contact-induced language change (Backus, 2001; Backus, Demirçay & Sevinç, 2013; Doğruöz, 2007; Doğruöz & Backus, 2007, 2009; Doğruöz & Gries, 2012) My studies in this dissertation concern mostly second and third generation speakers.

The earliest studies on Turkish bilingualism mainly focused on pre-school and primary school children (Boeschoten, 1990, 2000; Boeschoten & Verhoeven, 1987; Schaufeli, 1991, 1992, 1993; Verhoeven & Boeschoten, 1986) much less was done concerning the Turkish of Turkish adolescents and young adults who grew up in the Netherlands (see Table 1). It is precisely this last group that my studies focus on. The table below shows a schematic summary of the previous studies on Turkish-Dutch language contact in the Netherlands.

<table>
<thead>
<tr>
<th>Author, Date</th>
<th>Methodology</th>
<th>Variables</th>
<th>Age</th>
</tr>
</thead>
<tbody>
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<td>Verhoeven, L. &amp; Boeschoten, H. 1986</td>
<td>Interviews, free speech, picture recognition test, event describing based on the sequence of pictures, sentence imitation test</td>
<td>Word order, case marking, plural marking, verbal inflection, person marking, subject pronoun use</td>
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<td>Boeschoten, H. &amp; Verhoeven, L. 1987</td>
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<td>Code-switching, subject pronoun use, language mixing Dutch lexical items in Turkish</td>
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</tr>
<tr>
<td>Author, Date</td>
<td>Methodology</td>
<td>Variables</td>
<td>Age</td>
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<tr>
<td>Verhoeven, L. 1987a, 1987b</td>
<td>Picture selecting, picture naming, phoneme discrimination, sentence imitation, free conversation</td>
<td>Word order, case marking, plural marking, verbal inflection, person marking, subject pronoun use, spatial reference</td>
<td>6-8~</td>
</tr>
<tr>
<td>Verhoeven, L. 1987</td>
<td>Interviews, free speech, picture and event describing based on picture book</td>
<td>The acquisition of spatial expressions and spatial reference</td>
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</tr>
<tr>
<td>Boeschoten, H. 1987</td>
<td>Interviews, free speech, picture describing</td>
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<tr>
<td>Boeschoten, H. 1992</td>
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<td>4-6</td>
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<tr>
<td>Huls, E. &amp; de Mond, A. 1992</td>
<td>Interviews, picture naming, picture describing, reading</td>
<td>Reduction of linguistic elements, word order, case marking, vocabulary size, relative clause</td>
<td>Families</td>
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<td>Backus, A. 1992</td>
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<td>Aarssen, J. 1993</td>
<td>Interviews, free speech, oral and writing proficiency tests, Frog story, picture-sentence matching task</td>
<td>Cohesive devices, vocabulary, syntax, spelling, reading comprehension</td>
<td>4-12</td>
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<tr>
<td>Verhoeven, L. 1991a, 1991b</td>
<td>Interviews, free speech, picture and event describing based on</td>
<td>Early bilingual development</td>
<td>4-8*</td>
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<tr>
<td>Author, Date</td>
<td>Methodology</td>
<td>Variables</td>
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<td>El Aissati, A. &amp; Schaufeli, A. 1996</td>
<td>Interviews, picture naming, picture describing, reading, Frog story, picture-sentence matching task</td>
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<td>Interviews, free speech, oral and writing proficiency tests, Frog story, picture-sentence matching task</td>
<td>Cohesive devices, vocabulary, syntax, spelling</td>
<td>4-12~</td>
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<td>Backus, A. &amp; Van der Heijden, H. 1998</td>
<td>Free conversations, reading a picture book, interviews (wh-questions) relating to the events depicted</td>
<td>Code-switching, Dutch nouns or discourse markers affixed with Turkish inflection for person, number, and case</td>
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<td>Boeschoten, H. 1998</td>
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<td>Backus, A. 1996</td>
<td>Free in-group conversations</td>
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<td>Backus, A. 1996</td>
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<td>Adults 1st, 3rd</td>
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<tr>
<td>Author, Date</td>
<td>Methodology</td>
<td>Variables</td>
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<td>Backus, A. 2003, 2004</td>
<td>Group and individual conversations, Interviews</td>
<td>Code-switching, Dutch noun + <em>Turkish infinitive Yap</em> ‘do’ construction, second generation</td>
<td>Adults 1st, 3rd</td>
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<td>Doğruöz, S. &amp; Backus, A. 2007, 2009</td>
<td>Interviews</td>
<td>Word order, subject pronoun usage, case marking, sentence construction</td>
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<td>Yılmaz, G. 2011, 2013</td>
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<td>Adults* 2nd</td>
</tr>
</tbody>
</table>

*Note: Legend of symbols*
~ In this study both languages (Turkish & Dutch) are tested;
* Subject Type: In this study both bilingual and control group speakers are tested;
^ Different generation types 1st generation, 2nd generation and 3rd generation.
The Turkish language

Turkish is a Turkic language spoken in Turkey, Cyprus, Bulgaria, Greece, The Republic of Macedonia and other parts of the former Ottoman Empire. The number of native speakers is around 100 million. The total number including second-language speakers is around 125 million. Turkish is a member of the Uralic and Altaic language family. It is a pro-drop language with a Subject Object Verb (hereafter SOV) word order. Turkish has agglutinative morphology: words consist of roots or stems to which suffixes that encode for example case, mood or tense are attached. Turkish also has vowel harmony, it is a verb-framed language, and it has no grammatical gender. It has postpositions and nominal cases.

In this dissertation, Turkish nominal cases will play a central role, especially the accusative -i which marks the definite object of a verb and the locative ending -de. Locative case is used to express the location of an object, along with postpositions. Examples of postpositions are: üstünde, içinde, ortasında, etrafında, kenarında, araında ‘on, in, middle, around, on the side, between’ etc. (Creissels, 2008; Göksel & Kerslake, 2005; Hengirmen, 2002). The present section will introduce the Turkish cases in more detail.

In Turkish there are six different noun cases. They play a major part in determining a noun’s syntactic role in the sentence, as shown in Table 2.

Table 2: Turkish nominal cases

<table>
<thead>
<tr>
<th>Case</th>
<th>Ending</th>
<th>Examples</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominative</td>
<td>0</td>
<td>köy “village”</td>
<td>(the) village</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ağac “tree”</td>
<td></td>
</tr>
<tr>
<td>Genitive</td>
<td>-in</td>
<td>köyün köyün</td>
<td>the village’s, tree’s of the village/tree</td>
</tr>
<tr>
<td>Dative</td>
<td>-e</td>
<td>köye köye</td>
<td>to the village/tree</td>
</tr>
<tr>
<td>Accusative</td>
<td>-i</td>
<td>köyü köyü</td>
<td>the village/tree</td>
</tr>
<tr>
<td>Ablative</td>
<td>-den</td>
<td>köyden köyden</td>
<td>from the village/tree</td>
</tr>
<tr>
<td>Locative</td>
<td>-de</td>
<td>köyde köyde</td>
<td>in the village/on the tree</td>
</tr>
</tbody>
</table>

Case-endings follow the vowel harmony rules. As can be seen in Table 2, the Nominative case has no ending and indicates e.g. a subject of a sentence, the complement of a copula verb ‘to be, to become’, a vocative or an indefinite accusative (see Chapter 3). The case ending used in the Genitive case has four different surface forms following the vowel harmony either -in, -un, -iun, -iun. This case shows that the noun to which it is attached stands in a possessive or qualifying relationship to another noun: Adam-un evi [man-GEN house-3SG]. The Dative case ending occurs in two surface forms following vowel harmony rules: -e or -a. Dative case can mark e.g. the indirect object of a verb or the target of a motion event. The Accusative case ending occurs in four surface forms following vowel harmony: -i, -
i, -u, -ı. It marks the definite object of a verb. There is no definite article in Turkish, but definiteness of the object is implied when the accusative ending is used. The Ablative case expresses e.g. the point of departure and it has two surface forms following vowel harmony: either -den or -dan. The Locative case expresses location in the sense of place, time as well as in an abstract sense. This case ending has two surface forms following vowel harmony: either -de or -da. For example, as in Pieter ev-de ‘Pieter is at home’, Fincan masa-da ‘The cup is on the table’. Also, the locative case can be used with expressions denoting shape, size, colour, and age of an object, where English idiom varies between ‘of’ and ‘in’. The main focus in the first three chapters of this dissertation will be on these case markers.

**Papiamento**

**The Papiamento community**

One of the biggest migrant speech communities in the Netherlands is the community of Papiamento speakers. The migration from the Dutch Antilles, connected with the Netherlands’ colonial past, is still ongoing. Due to this, Papiamento speakers have very diverse sociological profiles, ranging from well-established long term residents to new migrants. The language input from the Antilles continues to be reinforced by fresh input from newcomers. There are no restrictions on migration as in the case of Turks, because Papiamento speakers also have Dutch nationality. They are free to visit and reside in the Netherlands. As we have seen for Turkish, high vitality is also a characteristic of Papiamento in the Antillean speech community. Papiamento and Turkish in the Netherlands both show relatively high language maintenance (Extra & Verhoeven, 1993; Extra et al., 2002). Therefore, comparing the effects of contact on these two languages helps us to understand the relative contribution of typological differences in accounting for contact-induced change in settings of high language maintenance.

**The Papiamento language**

Papiamento is the language of the Netherlands Antilles. Dutch has always been the official language used on the Netherlands Antilles, “but its use is restricted to the domains of education and administration by the government, domains nowadays which Papiamento has also moved into” (Kouwenberg & Murray, 1994). Nobody knows the exact time when the language started to develop, but what is known is that it started to emerge when the Europeans colonized the islands.

Papiamento is spoken by approximately 270,000 people, the majority of them in the Caribbean islands Aruba, Bonaire and Curaçao, and some 30,000 in the Netherlands (Kook & Narain, 1993; Kouwenberg & Murray, 1994). Papiamentu
received official status on Aruba in 2003, with Bonaire and Curaçao following in 2007.

Different hypotheses have been postulated for the origins of Papiamento, but the current consensus is that it is a direct descendant of Upper Guinea Creole (Jacobs, 2009). However, it contains elements of at least six different languages, which have contributed in different stages of its development (see Table 3).

Table 3: Contributing languages of Papiamento (from Muysken, 2013)

<table>
<thead>
<tr>
<th>Source</th>
<th>Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>African languages</td>
<td>Early transfer in L2 acquisition, bilingual convergence, attrition</td>
</tr>
<tr>
<td>Portuguese</td>
<td>Lexifier for the original West-African pidgin</td>
</tr>
<tr>
<td>Arawakan</td>
<td>Borrowing of flora and fauna vocabulary</td>
</tr>
<tr>
<td>Spanish</td>
<td>Later source of peripheral vocabulary</td>
</tr>
<tr>
<td>Dutch</td>
<td>Some early core vocabulary, source of later peripheral vocabulary,</td>
</tr>
<tr>
<td></td>
<td>lexically determined structures</td>
</tr>
<tr>
<td>English</td>
<td>Occasional borrowings</td>
</tr>
</tbody>
</table>

Papiamento is a Creole language, with predominantly Ibero-Romance (Spanish and Portuguese) and some Arawak vocabulary. Papiamento has loans from English and Dutch as well (Kouwenberg & Lefebvre 2007; Kouwenberg & Singler 2008; Kouwenberg 2013; Wood, 1970). The basic word order of Papiamento is SVO, also in question sentences. It is neither pro-drop like Spanish and Portuguese, nor V2 like Dutch. Pronominal objects cannot be moved to preverbal position (Vedder, Kook & Muysken, 1996; Muysken, Kook & Vedder, 1996; Vedder, Kook & Muysken, 1996: 492). Papiamento distinguishes both lexical stress and tone and uses both stress and prosodic accent. Papiamento word order does not change in yes/no questions. Affirmatives can become interrogatives by changing the intonation of the sentence (Kouwenberg & Murray, 1994: 35). Papiamento does not have conjugated verbs; tenses are indicated by verb particles preceding the verb (Muysken, Kook & Vedder, 1996: 493). There is little inflection in general. To specify the gender of an animate entity, e.g. a cat, an adjective may be added if needs be.

The final chapter in this dissertation will concern Papiamento dative usage. According to Bruyn et al. (1999) Papiamento has only one possibility to construct dative sentences, which is the Double Object Constructions as in Maria ta duna mi un buki ‘Mary give me a book.’ Agard (2010) points out that an Indirect Object must precede a Direct Object, as in:
Bo ta duna mi e plaka
2SG PR give 1SG.O DET money
‘You give me the money.’

Table 4 presents a schematic summary of previous studies on Papiamento and on Papiamento-Dutch language contact in the Netherlands, mostly conducted by Dutch linguists; only a handful of studies were carried out by native Papiamento speakers. Here we see the same pattern as for Turkish.

**Table 4:** Earlier research on Papiamentu/Dutch contact

<table>
<thead>
<tr>
<th>Author, Date</th>
<th>Methodology</th>
<th>Variables</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kook, H. &amp; Vedder, P. 1989 I, 1989 II</td>
<td>Informal adult-child interviews, free conversation, picture and event describing based on the sequence of pictures, language dominancy, speakers attitude tests, only the child data is analyzed</td>
<td>Language proficiency &amp; acquisition vocabulary and cognitive aspects, phonology, lexical, syntax, relative clause constructions, word decoding &amp; text reading comprehension</td>
<td>9-12- *</td>
</tr>
<tr>
<td>Kook, H. &amp; Narain, G. 1993</td>
<td>Informal adult-child interviews, free conversation, picture and event describing based on the sequence of pictures, language dominancy, speakers attitude tests, only the child data is analyzed</td>
<td>Language proficiency &amp; acquisition, relative clause construction, code switching, language mixing word decoding and text reading comprehension</td>
<td>4-8- *</td>
</tr>
<tr>
<td>Narain, G. &amp; Verhoeven, L. 1993</td>
<td>Informal adult-child interviews, free conversation, picture and event describing</td>
<td>Language proficiency, phonology, lexical, syntactic, cognitive categorization, receptive and productive vocabulary</td>
<td>4-8- *</td>
</tr>
<tr>
<td>Author, Date</td>
<td>Methodology</td>
<td>Variables</td>
<td>Age</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Kouwenberg, S. &amp;</td>
<td>Literature study, observations</td>
<td>Grammar sketch</td>
<td></td>
</tr>
<tr>
<td>Murray, E. 1994</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agard, B. 1985</td>
<td>Literature study</td>
<td>Grammar sketch</td>
<td></td>
</tr>
<tr>
<td>Muysken, P. Kook,</td>
<td>Adult-child interviews, book reading and retelling, passive and active vocabulary tests, only the child data is analyzed</td>
<td>Code-switching, borrowing, insertion of Dutch nouns and numerals into Papiamento</td>
<td>4-7~*</td>
</tr>
<tr>
<td>&amp; Vedder, P. 1996</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jacobs, B. 2008</td>
<td>Literature study</td>
<td>Origins of Papiamento</td>
<td></td>
</tr>
<tr>
<td>Vedder, P., Kook,</td>
<td>Adult-child interviews, book reading and retelling, passive and active vocabulary tests, only the child data is analyzed</td>
<td>Lexical analysis, question words and connectives, words related to meta-linguistic and mental activity, numbers</td>
<td>4-7~*</td>
</tr>
<tr>
<td>H. &amp; Muysken, P.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1996^</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bruyn, A., Muysken, P. &amp; Verrips, M. 1999</td>
<td>Literature study, field observations</td>
<td>Double-Object Constructions</td>
<td>Adults</td>
</tr>
</tbody>
</table>

Note: Legend of symbols
~ In this study both languages (Papiamento & Dutch) are tested;
* Subject Type: In this study both bilingual and control group speakers are tested;
^ Different generation types 1st generation, 2nd generation and 3rd generation.

**Dutch**

Dutch is a West Germanic language spoken by around 26 million people, mainly in the Netherlands and the northern parts of Belgium. Dutch is the language of government, education, and daily life in both countries. Dutch is a non pro-drop language and the basic word order in main clauses is SVO. However, in subordinate clauses finite verbs occur in sentence-final position, resulting in SOV word order. Dutch is a satellite-framed language. It has three genders, with the gender of a word determining the form of determiners used with it and of pronouns that refer to it.
Dutch uses prepositions, which usually occur directly in front of noun phrases and indicate the position of a Figure object (Van Staden, 2007; Van Staden, Bowerman & Verhelst, 2006). Examples of Dutch prepositions are: op ‘on’, aan ‘on’, in ‘in’, om ‘around’. Dutch also has phrasal verbs, such as praten over ‘to talk about’, verliefd zijn op ‘to be in love with someone’, that utilize these same prepositions.

Dutch has two possible ways to construct dative sentences: Double Object Constructions as in Maria geeft Pieter het boek ‘Mary gives Pieter a book’, and Prepositional Object Constructions as in Maria geeft het boek aan Pieter ‘Mary gives a book to Pieter’.

**Differences between Turkish, Papiamento and Dutch**

As noted, one of the reasons to study the contact between Dutch and Papiamento and between Dutch and Turkish is language maintenance. According to Extra & Verhoeven (1993) and Extra & Gorter, (2001) these minority languages are characterized by high vitality. One linguistic reason to compare the two contact settings is that these language pairs are linguistically not at all similar. As mentioned above, the choice of “Bilingual Optimization Strategy” (Muysken, 2013a) depends among other things on linguistic distance. Table 5 provides a rough overview of the linguistic differences between Papiamento, Turkish and Dutch.

**Table 5:** Some grammatical differences between the three languages in this study

<table>
<thead>
<tr>
<th></th>
<th>Papiamento</th>
<th>Turkish</th>
<th>Dutch</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TMA</strong></td>
<td>pre-verbal particles</td>
<td>verbal suffixes</td>
<td>inflected verbs, auxiliaries</td>
</tr>
<tr>
<td><strong>Evidentiality</strong></td>
<td>weakly grammaticalized</td>
<td>strongly grammaticalized</td>
<td>(strongly) grammaticalized</td>
</tr>
<tr>
<td><strong>Argument realization</strong></td>
<td>zero marking; few prepositions</td>
<td>rich case marking</td>
<td>some pronouns have case marking</td>
</tr>
<tr>
<td><strong>Word-order</strong></td>
<td>fixed word-order</td>
<td>free word-order</td>
<td>relatively free word-order</td>
</tr>
</tbody>
</table>

If we compare the example sentence ‘Didn’t you (pl.) see us?’ (where PL is plural, AC = accusative case, PAST = past or realized tense; NEG = negation; Q = question particle) in the three languages, we can easily see the main differences: the Turkish verb contains all information about the subject, such as who did what and when, while Dutch uses an auxiliary and pronouns to convey this information. Papiamento has pre-verbal particles and the Papiamento verb contains no inflection at all.
Crucially, in Turkish all information is packed into the verb, while Papiamento and Dutch use separate short words. The expectation is that the syntactic differences between Dutch and Papiamento and between Dutch and Turkish will lead to different kinds of changes in bilingual speech, and speakers will use different kinds of “bilingual optimization strategies”.

1.5. The present dissertation

This dissertation reports on the findings of four studies of contact-induced change, three of them on immigrant Dutch-Turkish and one on immigrant Dutch-Papiamento. The language production of bilingual speakers and monolingual speakers has been examined applying both psycholinguistic experimental and sociolinguistic corpus-based techniques.

In this section I will describe the content of the following chapters. Chapter 2 reports on a study on the production of Turkish and Dutch topological adpositions, in particular the use of locative constructions by Turkish-Dutch bilingual speakers. Numerous researchers have studied the important question of how languages carve up space (see e.g., Bowerman, 1996; Bowerman & Choi, 2001; Bra, 2007; Clark, 1968; Creissels, 2008; Dicle, 2013; Feist, 2000, 2004; Feist & Gentner, 2007; Gentner & Bowerman, 2009; Jackendoff, 1983; Landau & Jackendoff, 1993; Levinson & Meira, 2003; Levinson & Wilkins, 2006; Pederson & Danziger, 1998; Slobin & Johnston, 1978; Talmy, 2000a, 2000b; Vendeloise, 1988, 1991; Van Staden, 2007; Van Staden, Bowerman & Verhelst, 2006; Zlatev, 2007) While the topological domain of space has a long and rich research tradition with various types of research methods, we will here focus on one particular study; Bowerman’s study of topological relations (Bowerman & Pederson, 1992). Our study was inspired by this work; we have used her elicitation technique and stimuli material for eliciting and collecting spatial expressions in Turkish and in Dutch. In this study, we investigated how two groups of Turkish-Dutch bilinguals living in the Netherlands and two groups of native monolingual speakers of the two languages described static topological relations between the two languages. The bilingual groups differed with respect to their first (L1) and second (L2) language proficiencies and a number of
sociolinguistic characteristics. Using an elicitation tool that covers a wide range of topological relations, we first assessed the extensions of different spatial expressions (Topological Relation Markers, from now on TRMs) in Turkish and Dutch spoken by monolingual speakers in the two countries. We then assessed differences in the use of TRMs between the two bilingual groups and monolingual speakers. In both bilingual groups, differences were observed between bilingual and monolingual speakers. Dutch-dominant bilinguals enhanced the congruence between translation-equivalent Turkish and Dutch TRMs. Turkish-dominant bilinguals extended the use of a topologically neutral locative marker. Changes in TRM use occurred mainly for spatial situations that were described variably by monolingual speakers.

Chapter 3 covers contact-induced grammatical change in the Turkish case marking system in the Netherlands. Using analyses of the Turkish Spoken Corpus, the study focuses especially on changes in the usage of the accusative and dative. Differences between Dutch-Turkish and Turkey-Turkish are addressed. Earlier studies on Dutch-Turkish have already reported Dutch influence on Turkish (e.g., Doğruöz & Backus, 2009). According to Thomason & Kaufman (1988) the longer a contact situation lasts, and especially the more intense it is, the more contact influence can be predicted. While change can never be fully predicted, some structures from the source language appear to be more attractive than others (Johanson, 2002b). Turkish has a case marking system, and the discussion in this chapter will focus on the accusative and dative, which encode direct and indirect objects in Turkish. In addition to the three cases that mark spatial relations (dative, locative and ablative), it employs a nominative-accusative system for marking grammatical relations. Dutch, on the other hand, has no overt case marking and grammatical relations are generally marked by word order and spatial relations are marked by prepositions. While case marking is generally resistant to change, the results show that the duration of contact between the languages was long enough to influence even case marking.

Chapter 4 reports on an experimental study on the entrenchment and acceptance of unconventional usage in the competence of bilingual speakers in the Netherlands. Recent corpus studies have shown that the Turkish spoken by Dutch-Turkish bilinguals in the Netherlands contains innovative language usage (e.g., Doğruöz & Backus, 2007, 2009). Constructions and expressions which are unconventional in Turkey-Turkish are used quite frequently in the Netherlands. Two groups of Turkish-Dutch bilinguals and monolingual Turkish speakers provided judgments, on a 1-10 scale, of structures and lexical combinations considered typical of Dutch-Turkish. Participants had to state whether or not they liked the sentences and were also asked to improve the sentences if they did not like them. Results indicate that unconventional language usage is more often accepted by the Dutch-dominant bilinguals than by the other two participant groups. This is in line with the argument
that unconventional language usage of Dutch-Turkish bilinguals in the Netherlands is based on cross-language interaction between Dutch and Turkish.

Chapter 5, finally, reports on a study in which the potential role of cross-language structural priming was examined as a mechanism of contact-induced language change. In this final study I used a priming experiment alongside the other methods that I used in my three earlier studies on Turkish Dutch contact. Additionally I tested in this study the influence of Dutch on Papiamento to compare and cross-reference two different contact settings in the Netherlands. Cross-language structural priming is the process in which bilingual speakers have the tendency to re-use the syntactic structure of a previously heard sentence in one language in the production of a new sentence in another language (e.g., Hartsuiker & Pickering, 2008; Pickering & Ferreira, 2008; Weber & Indefrey, 2009). The priming mechanism was investigated in the production of Papiamento dative sentences by Papiamento-Dutch bilinguals. In Dutch, dative sentences can be produced using either a prepositional object structure (e.g., the man gives the ball to the woman) or a double object structure (e.g., the man gives the woman the ball). In Papiamento, however, people predominantly use the double object structure. The speakers’ preference for the double object structure was confirmed in a baseline study in Papiamento. Papiamento-Dutch bilinguals described movie clips representing a dative event in Papiamento. The results of baseline study indicated that the double object structure was indeed the preferred structure. Once this double object preference was established, a cross-language syntactic priming experiment was carried out to test whether the bilinguals’ syntactic choices could be primed by Dutch. A new group of Papiamento-Dutch bilinguals with various backgrounds listened to a Dutch dative prime sentence and then described a movie clip representing a dative event in Papiamento. The Dutch prime sentences either had a prepositional object structure or a double object structure. We tested whether the Dutch prime sentence influenced syntactic choice in Papiamento. Results showed that the participants produced a prepositional object dative structure significantly more often after hearing a prepositional object prime sentence in contrast to when they heard a double object prime sentence first. We found an effect of structural priming on participants’ tendency to produce a PO or DO structure, a general effect of age. Younger participants in the Netherlands had a stronger tendency to produce Dutch-like syntactic structures. Sociolinguistic and psycholinguistic interpretations of this effect are discussed and connected to the notion of priming and language change. The age effect can be seen as a more long-term, sustained form of structural priming, which strengthens the hypothesis that structural priming may be a mechanism of long-term reflection of language contact, such as contact-induced language change.

Chapter 6 concludes the studies in dissertation and the presents the final results of my 4 four studies.
The expression of spatial relationships in Turkish/Dutch bilinguals*

Abstract
In this study, we investigated how two groups of Turkish/Dutch bilinguals and two groups of monolingual speakers of the two languages described static topological relations. The bilingual groups differed with respect to their first (L1) and second (L2) language proficiencies and a number of sociolinguistic factors. Using an elicitation tool that covers a wide range of topological relations, we first assessed the extensions of different spatial expressions (topological relation markers, TRMs) in the Turkish and Dutch spoken by monolingual speakers. We then assessed differences in the use of TRMs between the two bilinguals groups and monolingual speakers. In both bilingual groups, differences compared to monolinguals speakers were mainly observed for Turkish. Dutch-dominant bilinguals showed enhanced congruence between translation-equivalent Turkish and Dutch TRMs. Turkish-dominant bilinguals extended the use of a topologically neutral locative marker. Our results generally confirmed the prediction that the choice of ‘bilingual optimization strategy’ (Muysken, 2013) depends on factors such as L1 and L2 proficiency and the perceived relative prestige of the two languages, when other factors such as linguistic similarity and the contact situation are held constant.

Keywords: Contact-induced language change, spatial expressions, Topological relation markers, Bilinguals, Bilingual optimization strategy

*A revised version of this chapter is under review as: Peter Indefrey, Hülya Şahin & Marianne Gullberg, The expression of spatial relationships in Turkish/Dutch bilinguals.
2.1. Introduction

Muysken (2013) recently proposed a unified framework for the explanation of language-contact phenomena across different domains such as code-switching, Pidgin and Creole languages, convergence phenomena, and the interaction of languages in bilingual individuals. In this framework, Muysken spells out the influence of linguistic and sociolinguistic factors on the choice of four types of “bilingual optimization strategies”: an L1-type (“maximize structural coherence of the first language”), an L2-type (“maximize structural coherence of the second language”), an L1/L2-type (“match between L1 and L2 patterns where possible”), and a UP-type (“rely on universal principles of language processing”). According to Muysken (2013, his Figure 4), the L1-type is favored by L1 prestige, low L2 proficiency, and limited access to L2. Conversely, the L2-type is favored by L2 prestige, high L2 proficiency, and large numbers of L2 speakers. The L1/L2-type is favored by lexical similarity, typological similarity, and low normativity, and the UP-type by political distance, lexical/typological distance, and a short contact period. Both, L1/L2 and UP are favored in cases where the languages are equally dominant.

If Muysken’s framework is interpreted as a theory from which predictions about contact-induced changes can be derived, it should be testable with novel data on contact-induced language changes. It is far from trivial, however, how such a test should be conducted. One difficulty concerns potential interactions between the different factors. What exactly is predicted, when two languages are typologically similar (favoring L1/L2-type), speakers are of low proficiency (favoring L1-type), there are many speakers of the dominant language (favoring L2-type), and there is a short contact period (favoring UP-type)? Another difficulty lies in the vagueness of some of the notions involved. What, for example, counts as lexical similarity? Are only cognates similar or also words that are highly equivalent? At present, the best answer probably is that these issues are not yet clear but could be clarified with more data on contact situations where some of these factors are constant and others vary, so that the relative impact of the latter can be evaluated. The study we report here is of this kind. We investigated contact-induced changes in two groups of Turkish/Dutch bilingual speakers. Both bilingual groups shared the linguistic relationship between the languages (typologically different, few cognates) and the contact situation (immigrants in a country with the majority language Dutch) but they differed with respect to their age of arrival in the Netherlands, language proficiency, and the perceived importance of the two languages.

Our domain of investigation was the use of spatial expressions in descriptions of static topological relationships. This domain is of particular interest for at least two reasons. Firstly, spatial expressions reflect the typological distance between Turkish and Dutch in line with other syntactic and morphological properties of the two
languages, such as main clause word order (Turkish SOV, Dutch SVO), use of subject pronouns (Turkish pro-drop, Dutch non pro-drop, and morphology (Turkish agglutinative, Dutch inflectional). In Dutch, spatial relationships are expressed with prepositions, such as ‘in’, ‘on’, ‘under’ as in (1).

(1) \textit{op de tafel}
  on the table

In Turkish, static spatial relationships are expressed with spatial nominals following the noun referring to the ground object as in (2) or with a locative case suffix on the noun referring to the ground object as in (3).

(2) \textit{masa-\textsubscript{nn} üst-\textsubscript{in-de}}
    table-\textit{GEN} top-\textit{GEN-LOC}
    on the table

(3) \textit{masa-da}
    table-\textit{LOC}
    on the table

In terms of Muysken’s (2013) similarity factor, the linguistic relationship between the Turkish and the Dutch constructions can thus unambiguously be characterized as typologically distant.

A second reason to investigate spatial descriptions is the lack of data on contact-related changes in this domain. Studies of contact-induced changes have largely focused on grammatical phenomena and the same holds for studies of immigrant Turkish (Boeschoten, 2000; Doğruöz, 2007; Keim & Cindark, 2003; Rehbein, Herkenrath & Karakoç, 2009; Roberts, Gullberg & Indefrey, 2008; Schaufeli, 1992; Treffers-Daller, 2005). Also Muysken (2013) mainly considered contact-induced grammatical change, so that testing predictions derived from his framework in a novel domain, will be informative with respect to the strength and generalizability of his theory.

In a recent corpus study, Doğruöz & Backus (2009) analyzed a range of unconventional constructions in immigrant Turkish in the Netherlands and concluded that there is little evidence for violations of Turkish syntax and that the main source of unconventionality seems to be the translation of “lexically complex individual units into Turkish”. The authors emphasize that the perceived semantic equivalence between Dutch and Turkish units is important for such translations to occur. The results of Doğruöz & Backus (2009) suggest that translation equivalence could also play a role for possible contact-induced changes in the use of spatial expressions. We therefore planned our study such that we could assess the
extensions of both Dutch and Turkish TRMs, and hence their degrees of translation equivalence, in monolingual speakers and use that information to test whether translation equivalence affected the use of TRMs by bilingual speakers.

**Predictions**

All of Muysken’s (2013) conditions for an L2-type of bilingual optimization strategy (L2 prestige, high L2 proficiency, and large numbers of L2 speakers) held for our Dutch-dominant bilingual group. In this group, we therefore expected asymmetric contact-induced changes with the Dutch use of spatial expressions influencing the Turkish use.

For the Turkish-dominant bilingual group the predictions were not so straightforward. Whereas the contact situation with large numbers of L2 speakers was the same for this group, our questionnaire data (see below) showed that both languages had equal prestige and L2 proficiency was still high but lower than in the Dutch-dominant group. This group, therefore, might still show the L2-type of optimization strategy or one of the two types (L1/L2 and UP) that the framework predicts to be favored in cases where the languages are equally dominant. In the latter case, a UP-type seemed more likely based on the typological distance between the languages, however, depending on the degree to which translation equivalence existed and was perceived as lexical similarity, the L1/L2 type seemed also possible.

Note that more specific predictions as to what an L2- (or L1/L2- or UP-) type of bilingual optimization strategy might mean in the case of spatial expressions depends on how we analyze the spatial descriptions of monolingual Dutch and Turkish speakers. We will, therefore, come back to this issue in the discussion section.

### 2.2. Methods

**Participants**

Four groups with a total of 60 adults participated in the study. The first two groups consisted of native speakers of Turkish (‘Turkish monolinguals’, Group TN, n = 15) and Dutch (‘Dutch monolinguals’, Group DM, n = 15) who did not speak Dutch or Turkish as a second language. The participants of two further groups were Turkish/Dutch bilingual speakers. Participants of Group TN were tested in Antalya, Turkey. All other participants were tested in Nijmegen, the Netherlands. All participants were paid a small fee for their participation.

In the group of Turkish-dominant bilinguals (TDB) all participants had arrived in the Netherlands as adolescents or young adults. In the group of Dutch-dominant bilinguals (DDB) all participants were born in the Netherlands or had arrived before the age of 4. Table 1 shows details of age, education, language exposure, and
The expression of spatial relationships in Turkish/Dutch bilinguals

proficiency for all groups. Please note that our labels ‘monolingual’ and ‘bilingual’ only refer to the languages Dutch and Turkish. Participants of all groups had learned at least English as a second or third language at school.

Table 1: Characteristics of the four participant groups

<table>
<thead>
<tr>
<th></th>
<th>Native Turkish speakers without knowledge of Dutch (TN, N = 15)</th>
<th>Native Dutch speakers without knowledge of Turkish (DN, N = 15)</th>
<th>Turkish-dominant bilinguals (TDB, N = 15)</th>
<th>Dutch-dominant bilinguals (DDB, N = 15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>31.0 (10.7)</td>
<td>39.2 (12.5)</td>
<td>39.0 (5.6)</td>
<td>25.4 (5.2)</td>
</tr>
<tr>
<td>Education in Turkey (years)</td>
<td>13.3 (2.7)</td>
<td>13.8 (2.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education in the Netherlands (years)</td>
<td>13.4 (2.4)</td>
<td>3.7 (1.4)</td>
<td>15.3 (1.4)</td>
<td></td>
</tr>
<tr>
<td>Age of arrival in the Netherlands (years)</td>
<td>20.2 (5.7)</td>
<td>0.6 (1.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of residence in the Netherlands (years)</td>
<td>18.2 (5.3)</td>
<td>24.8 (4.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CITO Dutch proficiency test score (Max. Score = 60)</td>
<td>55 (2.2)</td>
<td>50 (4.3)</td>
<td>55 (3.6)</td>
<td></td>
</tr>
<tr>
<td>CITO Turkish proficiency test score (Max. Score = 8)</td>
<td>6.6 (1.3)</td>
<td>6.4 (1.4)</td>
<td>5.2 (1.1)</td>
<td></td>
</tr>
</tbody>
</table>

The participants completed a detailed language background questionnaire (Gullberg & Indefrey, 2003) and standardized language proficiency tests (Centraal Instituut voor Toetsontwikkeling, CITO) in their native language (Groups TN and DN) or both languages (Groups TDB and DDB). For Dutch we used a written cloze test of Dutch as a second language, for Turkish a test of text comprehension for Turkish
native speakers. Because the tests were to be applied after the experimental session in the respective language we chose short (20 minutes) proficiency tests that could not cover all language skills but nonetheless provided some objective basis for comparison between groups. The scores of bilingual participants in their dominant language did not differ significantly from that of monolingual participants (independent t-tests, group TDB vs. group TN and group DDB vs. group DN: $t < 1$, see Table 1). The scores of bilingual participants in their non-dominant language were significantly below the scores of monolingual participants of the same language (TDB vs. DN Dutch: $t$ (one-sided) = -3.892, $df = 28$, $p = 0.000$; DDB vs. TN Turkish: $t$ (one-sided) = -3.143, $df = 28$, $p = 0.002$) and below the proficiency of bilingual participants in their dominant language (TDB vs. DDB Dutch: $t$ (one sided) = -3.166, $df = 28$, $p = 0.002$; DDB vs. TDB Turkish: $t$ (one sided) = -2.702, $df = 28$, $p = 0.006$). The self-rated proficiency (Table 2) showed the same pattern.

As shown in Table 2, both bilingual groups used both languages on a daily basis and showed similar general exposure and personal communication patterns. Both groups preferred Dutch over Turkish TV and radio but had a more balanced exposure to both languages on the internet and with print media. Both groups communicated more in Turkish than in Dutch with their partners and relatives and predominantly in Dutch with colleagues. The patterns differed with respect to communication with their children and friends, where Dutch-dominant participants reported a more frequent use of Dutch and Turkish-dominant participants a more frequent use of Turkish. The bilingual groups did not differ in their attitude toward Dutch but Turkish dominant participants gave themselves significantly (Mann-Whitney-U-Test, exact-significance, one-sided, all $p < 0.05$, one-sided) higher ratings for liking Turkish, being confident in Turkish, and finding Turkish important than Dutch-dominant bilinguals did.
Table 2: Language background of bilingual participants

<table>
<thead>
<tr>
<th></th>
<th>Turkish-dominant bilinguals</th>
<th>Dutch-dominant bilinguals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-rated valence toward Dutch and Turkish (1 = disagree, 5 = agree)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I like to speak ...</td>
<td>5 (3-5)</td>
<td>5 (3-5)</td>
</tr>
<tr>
<td>I am confident using ...</td>
<td>4 (3-5)</td>
<td>5 (3-5)</td>
</tr>
<tr>
<td>I find it important to be good at ...</td>
<td>5 (4-5)</td>
<td>5 (3-5)</td>
</tr>
<tr>
<td>Self-rated proficiency (1 = not good, 5 = very good)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speaking</td>
<td>4 (3-5)</td>
<td>5 (3-5)</td>
</tr>
<tr>
<td>Listening</td>
<td>4 (2-5)</td>
<td>5 (3-5)</td>
</tr>
<tr>
<td>Writing</td>
<td>3 (2-5)</td>
<td>5 (4-5)</td>
</tr>
<tr>
<td>Reading</td>
<td>5 (2.5-5)</td>
<td>5 (3-5)</td>
</tr>
<tr>
<td>Grammar</td>
<td>4 (2-5)</td>
<td>5 (2-5)</td>
</tr>
<tr>
<td>Pronunciation</td>
<td>4 (2-5)</td>
<td>5 (3-5)</td>
</tr>
<tr>
<td>Relative media exposure to Dutch and Turkish (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TV/Radio</td>
<td>71</td>
<td>29</td>
</tr>
<tr>
<td>Internet/Email</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Reading</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Relative usage of Dutch and Turkish in personal communication (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner</td>
<td>30</td>
<td>70</td>
</tr>
<tr>
<td>Children</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>Relatives</td>
<td>8</td>
<td>92</td>
</tr>
<tr>
<td>Friends</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>Colleagues</td>
<td>91</td>
<td>9</td>
</tr>
<tr>
<td>Other languages spoken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>German</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>French</td>
<td>1</td>
<td>22</td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
<td>8</td>
</tr>
</tbody>
</table>
Elicitation tool

We elicited descriptions of static spatial configurations using the Topological Relations Picture Series (TRPS, Bowerman & Pederson, 1992a, 1992b), which has been applied for the crosslinguistic study of spatial descriptions in many Indo-European and non-Indo-European languages (see Bowerman & Choi, 2001; Levinson & Meira, 2003). This booklet consists of 71 pages with line-drawings/pictures which depict a broad range of topological relations between Figure and Ground objects (see Figure 1 for an example). The Figure is colored in yellow and the experimenter asks the participants to describe its location relative to the Ground object by answering the question “Where is the (Figure)?”

![Figure 1: Example item from the Topological Relations Picture Series (Bowerman & Pederson, 1992)](image)

Procedure

Participants were individually tested in a quiet setting. They were exclusively addressed in Turkish or Dutch, both preceding and during the experiment, to make certain they were in a monolingual language mode (Grosjean, 1982). The experimenter showed one picture at a time in a printed version of the booklet and asked to provide a description of the spatial relationship between the Figure object and the Ground object. Questions and answers were audio-taped for coding and analysis.
Data analysis

All responses were transcribed and encoded in the digital audio-video tagging software ELAN by a native speaker of the relevant language.

Responses were analyzed using the following conventions:

1. Prepositions were coded for all Dutch responses containing a prepositional phrase composed of a simple (e.g. in, op, naas, ‘in, on, next to’) or complex (in het midden van, ‘in the middle of’) preposition plus a noun referring to the intended Ground object. Responses containing a copula (e.g. Het kopje is op de tafel. ‘The cup is on the table.’) or a full verb (e.g. Het kopje staat op de tafel. ‘The cup stands on the table.’; De ladder steunt tegen de muur. ‘The ladder is leaning against the wall.’) as well as responses using different but adequate nouns for the intended Ground object (e.g. vloerkleed/karpet/tapijt/mat ‘carpet (various kinds)’) were treated alike.

2. Postpositions and case marking suffixes were coded for all Turkish responses containing a noun referring to the intended ground object followed by a spatial nominal (e.g. içinde, üstünde, yanında, ortasında ‘in, on, next to, in the middle of’) or a noun referring to the intended Ground object marked with a locative (-de, -da) or dative case (-e, -a) suffix. Responses containing no verb (e.g. Fincan masanın üstünde. ‘The cup is on the table.’) or a full verb (e.g. Fincan masanın üstünde duruyor. ‘The cup stands on the table.’; Merdiven duvara yaslanmış. ‘The ladder is leaning against the wall.’) as well as responses using different but adequate nouns for the intended Ground object were treated alike. The variants üstünde/üzerinde and içeri/isenediçiinde that are used interchangeably were coded as üst and iç.

3. Responses, in which the figure was not located relative to the intended ground object but relative to a different object (e.g. The lamp is hanging from the ceiling. instead of The lamp is hanging above the table.) or part of the intended ground object (e.g. The apple is on the bottom of the bowl. instead of The apple is in the bowl.), and responses, in which no ground object was mentioned, were coded as invalid responses (1.7 % of all responses).

4. In cases of more than one answer, we only took the first answer into account.

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2 We analyzed the usage of the two variants by our participants and found it to be largely based on individual preference. In the group of monolingual Turkish speakers, for example, only two participants used the two forms üstünde and içeriinde in approximately equal proportions. Three participants used üstünde in over 90% of the cases. The remaining ten participants used içeriinde on average in 85% of the cases. We did not find any relationship to the kind of spatial relationship depicted.
2.3. Results

Frequencies of TRMs

In Turkish descriptions of the location of the seventy-one Figure objects (Figure 2), participants used most frequently the locative case marker -de/-da followed by the spatial nominals üst (‘on’); please note that from here on we will use the bare stem to refer to all spatial nominals), and iç (‘in’), the dative case marker -e/-a, and the spatial nominals alt (‘under’), yan (‘next to’), and çevre (‘around’). Infrequently used spatial nominals (orta ‘in the middle of’, dış ‘outside’, sol ‘to the left of’, uç ‘at the tip of’, ön ‘in front of’, ara ‘between’, kenar ‘to the side of’) added up to a considerable proportion of ‘others’ in particular for monolingual Turkish participants.

**Figure 2**: Mean frequencies of the spatial nominals and case markers used in the Turkish descriptions of spatial relations by monolingual native Turkish speakers (TN), Turkish-dominant bilingual speakers (TDB), and Dutch-dominant bilingual speakers (DDB).
In Dutch descriptions (Figure 3), participants used most frequently the preposition *op* (‘on’) followed by *aan* (‘on’), *in* (‘in’), *om* (‘around’), *onder* (‘under’), *naast* (‘next to’), and *boven* (‘above’). Less frequently used prepositions summarized as ‘others’ were *over* (‘across’), *tussen* (‘between’), *in het midden van* (‘in the middle of’), *tegen* (‘against’), *rondom* (‘around’), *onderaan* (‘under’), *door* (‘through’), *bij* (‘near’), *buiten* (‘outside’), *binnen* (‘inside’), *achter* (‘behind’), *bovenop* (‘above’), *voor* (‘in front of’), *langs* (‘along’), *links van* (‘to the left of’), and *rond* (‘around’).

**Figure 3**: Mean frequencies of the prepositions used in the Dutch descriptions of spatial relations by monolingual native Dutch speakers (DN), Turkish-dominant bilingual speakers (TDB), and Dutch-dominant bilingual speakers (DDB).

In both languages, there were differences between groups in their use of some TRMs. Given that the frequencies of most TRMs were not normally distributed we tested for significant differences between groups with a non-parametric test (Mann-Whitney-U-Test, two-sided, exact significance). Turkish monolingual participants differed from Dutch-dominant bilinguals in their less frequent use of *üst, iç*, and
çevre, from Turkish-dominant bilinguals in their less frequent use of the case marker -de/da, and from both other groups in their less frequent use of yan and more frequent use of other spatial nominals (all \( p = 0.000 \)). The two bilingual groups differed with respect to a more frequent use of iç (\( p = 0.001 \)) and çevre (\( p = 0.004 \)) in the Dutch-dominant compared to the Turkish-dominant group and a more frequent use of other spatial nominals in the Turkish-dominant compared to the Dutch-dominant group (\( p = 0.001 \)). Differences in the use of üst and the case marker -de/da were only marginally significant (both \( p < 0.1 \)).

Dutch monolingual participants differed from Turkish-dominant bilinguals in their more frequent use of boven (\( p = 0.021 \)), from Dutch-dominant bilinguals in their more frequent use of other prepositions (\( p = 0.025 \)) and from both bilingual groups in their less frequent use of naast (DN-TDB \( p = 0.014 \); DN-DDB \( p = 0.025 \)). The two bilingual groups differed with respect to a more frequent use of boven (\( p = 0.013 \)) and om (0.029) in the Dutch-dominant compared to the Turkish-dominant group.

**Variability of TRM usage**

To assess to what degree the observed differences in TRM usage were due to genuine shifts in the preference for certain TRMs or simply due to more or less variable TRM usage between languages and groups we calculated the mean number of different TRMs used per picture (Figure 4) and participant (Figure 5). Turkish monolingual participants used on average a wider range of TRMs for any particular picture than the two bilingual groups used in their Turkish description. By contrast, Dutch monolingual participants showed the opposite behavior. Whereas monolingual speakers of the two languages thus differed with respect to the relative range of prepositions they used for any particular picture, the same did not hold for the range of TRMs used by any particular participant. As can be seen in Figure 5, both Dutch and Turkish monolingual speakers used a wider range of TRMs across the 71 pictures than the bilingual groups. Moreover, dominant bilinguals used a wider range of TRMs than non-dominant bilinguals in both languages.
Figure 4: Mean number of different TRMs per item used in the Turkish (left panel) and Dutch (right panel) descriptions of spatial relations by monolingual native speakers (N), Turkish-dominant bilingual speakers (TDB), and Dutch-dominant bilingual speakers (DDB). (*p < 0.05, **p < 0.01, ***p < 0.001, Wilcoxon-Test, exact significance, two-sided)

Figure 5: Mean number of different TRMs per participant used in the Turkish (left panel) and Dutch (right panel) descriptions of spatial relations by monolingual native speakers (N), Turkish-dominant bilingual speakers (TDB), and Dutch-dominant bilingual speakers (DDB). (*p < 0.05, **p < 0.01, ***p < 0.001, Mann-Whitney-U-Test, exact significance, two-sided)
In sum, most between-group differences in TRM frequencies can be accounted for by the fact that participants with a better command of the language used a wider range of TRMs. The more different TRMs the larger the proportion of less frequently used TRMs (summarized as ‘others’ in Figures 2 and 3) and the smaller the proportions of the most frequently used TRMs. There are, however, two differences that cannot be accounted for in this way. Despite their wider range of TRMs, Turkish-dominant bilinguals used the locative case marker more often than Dutch-dominant bilinguals did and Dutch monolinguals used *boven* (‘above’) more often than Turkish-dominant bilinguals did. These observations suggest that there are also genuine qualitative between-group differences in the use of TRMs. To identify such differences, we will now turn to the patterns of TRM use across the different kinds of spatial relationships.

*Extensions of TRMs in monolingual native Turkish and Dutch speakers*

For every group and language we determined the most frequently used TRM for each of the 71 pictures. Following Bowerman (1996), Bowerman and Choi (2001) and Levinson and Meira (2003), we then constructed language and group extensional maps to show the groupings of pictures assigned a particular TRM. To facilitate visual inspection of the maps, we arranged the pictures in the maps such that the contiguity of regions of pictures described with the same TRM was maintained as well as possible for all groups and languages. Figure 6 provides an overview of the most frequently used TRMs for all 71 pictures. We color-coded the extensions of those Turkish and Dutch TRMs (*üst* and *op*, *-de* and *aan*, *iç* and *in*, *alt* and *onder*) that showed correspondences for larger numbers of pictures. With the exception of *-de/aan*, these pairs of Turkish and Dutch TRMs are listed as translation equivalents in Turkish/Dutch dictionaries.
Figure 6: Extension maps of the most frequently used TRMs for all 71 pictures of the Topological Relations Picture Series. Items that were equally often described with two TRMs are given the two corresponding background colors. (TN, DN = monolingual native Turkish and Dutch speakers, TDB = Turkish-dominant bilingual speakers, DDB = Dutch-dominant bilingual speakers) Colour code: *op/üst* (on): pink; *in/iç* (in): green; *-de/aan* (on): blue; *çevre/om* (around): yellow.

To obtain an unbiased metric of the congruence of two TRMs between Turkish and Dutch, we quantified the degree of extension overlap in the monolingual groups for all pairs of TRMs by calculating the proportion of congruent pictures (Congruence = the number of pictures for which the two TRMs were most frequently used in Turkish and Dutch divided by the number of pictures for which at least one of the two TRMs was most frequently used in Turkish or Dutch). The congruence values in Table 3 show that in our sample of pictures only *alt* and *onder* were fully
congruent\textsuperscript{3}, whereas -\textit{delaan}, \textit{üst}op, and \textit{iç}/\textit{in} showed values between 0.33 and 0.5 indicating a certain extension overlap but also a considerable number of spatial relations for which only one of the two TRMs was most frequently used.

**Table 3**: Matrix of congruence values of the most frequently used TRMs

<table>
<thead>
<tr>
<th></th>
<th>üst</th>
<th>iç</th>
<th>-de</th>
<th>alt</th>
<th>other</th>
<th>all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Op</td>
<td>12</td>
<td>0.43</td>
<td>0</td>
<td>0.00</td>
<td>5</td>
<td>0.14</td>
</tr>
<tr>
<td>Aan</td>
<td>2</td>
<td>0.06</td>
<td>0</td>
<td>0.00</td>
<td>9</td>
<td>0.33</td>
</tr>
<tr>
<td>In</td>
<td>2</td>
<td>0.07</td>
<td>6</td>
<td>0.50</td>
<td>2</td>
<td>0.07</td>
</tr>
<tr>
<td>Om</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
<td>0.00</td>
<td>4</td>
<td>0.17</td>
</tr>
<tr>
<td>onder</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>other</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>All</td>
<td>19</td>
<td>6</td>
<td>20</td>
<td>4</td>
<td>22</td>
<td>71</td>
</tr>
</tbody>
</table>

\textit{Note}: Congruence = DTj/(Dj+Tj-DTj) (j = pair of Dutch and Turkish TRMs; NDTj = number of items for which both TRMs of pair j were most frequently used in the Turkish and Dutch descriptions; NDj = number of items for which the Dutch TRM of pair j was most frequently used in the Dutch descriptions; NTj = number of items for which the Turkish TRM of pair j was most frequently used in the Turkish descriptions).

The leftmost panels in Figures 7-10 show extensional maps for the TRM pairs \textit{alt}/\textit{onder}, \textit{iç}/\textit{in}, \textit{üst}op, and -\textit{delaan} as used by Turkish and Dutch monolingual speakers. As already indicated by the congruence value of 1.0, the extensions of Dutch \textit{onder} and Turkish \textit{alt} fully overlap (Figure 7) comprising all pictures in which the figure object is with or without contact in part or completely under the ground object.

\textsuperscript{3} The TRMs \textit{arka} and \textit{achter} (‘behind’; included in the ‘other’ category) also had a congruence of 1.0 but were only used for one picture.
The expression of spatial relationships in Turkish/Dutch bilinguals

The extensions of Dutch in and Turkish iç (congruence value = 0.5, Figure 8) overlap for most pictures with partial or full inclusion of the figure objects in the ground objects. Whereas all uses of iç fell into the common extension of Dutch and Turkish, the use of in was broader than the common extension. Dutch speakers used in for partial inclusion relationships with body parts as ground objects whereas Turkish speakers preferred the locative suffix -de in these cases. Only two Turkish speakers used iç to describe the cigarette in the mouth, no one to describe the earring in the ear lobe. For the picture ‘owl in tree’, some Turkish speakers used iç when locating the owl relative to the tree but most speakers located it relative to a different ground object (hole, tree trunk) marked for locative case. For the pictures showing a crack in a cup and a hole in a towel, Turkish speakers never used iç but preferred the TRMs ‘in the middle of’ and ‘on the left side of’.

Figure 7: Extension maps of the TRMs ‘alt’ and ‘onder’. The red border marks the common extension of the two TRMs.

Table: Dutch & Turkish monolingual speakers

<table>
<thead>
<tr>
<th>Dutch &amp; Turkish monolingual speakers</th>
<th>Turkish-dominant bilingual speakers</th>
<th>Dutch-dominant bilingual speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Diagram of Dutch &amp; Turkish monolingual speakers" /></td>
<td><img src="image2" alt="Diagram of Turkish-dominant bilingual speakers" /></td>
<td><img src="image3" alt="Diagram of Dutch-dominant bilingual speakers" /></td>
</tr>
<tr>
<td>onder/ alt</td>
<td>onder/ alt</td>
<td>onder/ alt</td>
</tr>
</tbody>
</table>

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Figure 7: Extension maps of the TRMs ‘alt’ and ‘onder’. The red border marks the common extension of the two TRMs.
The extensions of Dutch *op* and Turkish *üst* (congruence value = 0.43, Figure 9) overlap for most pictures where the figure object is higher than the ground object and supported by it. The extension of *op* also included a number of spatial relationships that were preferentially marked with locative case by Turkish speakers, such as support from below with a body part (head) as the ground object and ‘clingy attachment’ relationships (fly on the ceiling/wall, band aid on leg) and spatial relations where Turkish speakers preferred other TRMs such as ‘in the middle of’ and ‘on the right side of’. In all these cases up to three out of the fifteen Turkish speakers used *üst*. The extension of the preferred use of *üst* included spatial relations that were described with *aan* (butter on knife), *over* (hose across tree trunk) and *boven* (lamp above table, cloud above mountain) by Dutch speakers. Up to five Dutch speakers used *op* instead of *aan* or *over*. By contrast, Dutch speakers never used *op* to describe the two pictures showing figure objects that were higher than but not supported by the ground object. For these pictures they unanimously used the preposition *boven* (‘above’).
The expression of spatial relationships in Turkish/Dutch bilinguals

Figure 9: Extension maps of the TRMs ‘üst’ and ‘op’. The red border marks the common extension of the two TRMs. The items above were described with ‘op’ in Dutch and the indicated TRMs in Turkish. The items below were described with ‘üst’ in Turkish and the indicated prepositions in Dutch. Items that were equally often described with two TRMs are given the two corresponding background colors.

The extensions of Dutch *aan* and Turkish *-de/-da* (congruence value = 0.33, Figure 10) overlap for many spatial relationships involving some kind of fixed attachment. Whereas Dutch speakers also used *aan* for attachment of the figure object to a point or the end of the ground object, most Turkish speakers preferred the more explicit spatial nominal *uç* (‘at the tip of’) but *-de/-da* was used by one or two speakers. As already reported above, Turkish speakers preferred to use *-de/-da* over the spatially explicit spatial nominals * iç* and * üst* whenever the ground object was a body part. As shown in Figure 10, this observation can be generalized to ‘around’ relationships that Dutch speakers described using the preposition *om*. 
To summarize, all TRM pairs showed a relatively clearly defined extension overlap. Language-specific uses seemed to be mainly due to:

(a) Turkish speakers distinguishing between body parts and other ground objects by using the locative suffix for (predictable) relations between figure objects and body part ground objects and spatially explicit spatial nominals for other kinds of ground objects,

(b) A preference of Turkish speakers to name the location area (left, right, middle) of the figure object in some cases and to name a contact point in all cases,

(c) Dutch speakers distinguishing between fixed (*aan*) and other kinds of attachment (*op*)

(d) Dutch speakers distinguishing between ‘higher than’ relationships involving contact/support (*op*) or not (*boven*).

**Extensions of TRMs in bilingual speakers**

The middle and right panels in Figures 7-10 show the extensions of the four pairs of TRMs in the Turkish and Dutch descriptions of the bilingual groups. The patterns of differences in the extensions of Dutch-dominant bilinguals compared to monolingual speakers are relatively straightforward. For all TRM pairs, the common extension of Dutch-dominant bilinguals almost completely included the common...
extension of the monolingual speakers. In other words, where monolingual speakers used translation-equivalent TRMs, Dutch-dominant bilinguals did the same, but described a varying number of additional spatial relationships with these TRM pairs.

For the TRMs *alt* and *onder* that showed fully overlapping extensions in monolingual speakers, these extensions were the same in Dutch-dominant bilinguals.

For *iç* and *in*, the larger common extension in Dutch-dominant bilinguals was mainly due to pictures that neither Dutch nor Turkish monolinguals preferred to describe using *iç* or *in* (one Dutch and three Turkish monolinguals used *in/iç* to describe the house within the fence, five Dutch and no Turkish monolinguals used *in/iç* to describe the cork on the bottle).

For *üst* and *op*, by contrast, the larger common extension in Dutch-dominant bilinguals did not contain ‘new’ items but mainly pictures that were preferentially described with *op* by Dutch monolinguals and for which Dutch-dominant bilinguals but not Turkish monolinguals preferred *üst* in their Turkish description. Note, however, that for all these items also some Turkish monolinguals used *üst* (see above). The extension of the preferred use of *op* by Dutch-dominant bilinguals included one additional item (butter on knife) for which also a relatively large minority of five Dutch monolinguals used *op* instead of *aan*.

Also for *aan* and -de/da, the larger common extension in Dutch-dominant bilinguals was mainly due to items that were preferentially described with *aan* by Dutch monolinguals and for which Dutch-dominant bilinguals but not Turkish monolinguals preferred the locative case marker -de in their Turkish description. The extension of the preferred use of *aan* by Dutch-dominant bilinguals included one additional item (earring in ear lobe) for which also a relatively large minority of four Dutch monolinguals used *aan* instead of *in*.

In sum, the descriptions of Dutch-dominant bilinguals differed from those of monolinguals in that there were larger common extensions of Turkish and Dutch TRMs. In almost all cases this increase was due to the bilinguals using description options that were not most frequently but at least occasionally used by monolingual speakers. It is worth mentioning some properties of the descriptions of Dutch-dominant bilinguals that did not differ from the description of monolinguals:

(a) Dutch-dominant bilinguals did not adopt the Dutch distinction of kinds of attachment for Turkish or the lack of such a distinction for Dutch.

(b) They did not adopt the Turkish distinction of ground objects for Dutch (with the possible exception of the ‘earring in the ear lobe’ item) or the lack of such a distinction for Turkish (with the exception of the ‘hat on the head’ item)

(c) They did not adopt the Turkish lack of a distinction between ‘on’ and ‘above’ relations for Dutch.

The patterns of differences between the TRM extensions of Turkish-dominant bilinguals and those of the other groups were more complex. Whereas the common
extension of *alt* and *onder* was not different from that of monolingual speakers, the common extension of *-de* and *aan* was considerably larger. The common extensions for *üst* and *çın* did not much differ from those of monolinguals in size but, unlike for Dutch-dominant bilinguals, did not always include the common extensions of the monolingual speakers. For some items (rain on window, man on roof, rabbit in cage) that Turkish monolinguals described with *üst* or *çın* Turkish-dominant bilinguals preferred the locative suffix. The main difference between the Turkish descriptions of the Turkish-dominant bilinguals and those of the other groups was a much broader use of the locative suffix (28 items, see Figure 10) covering many of the point attachment relations that Turkish monolinguals preferred to describe with *çın* as well as the ‘in’ and ‘on’ relations mentioned above. Note, however, that for all these items there were also between one and four monolinguals who did use the locative suffix in their descriptions.

In sum, the descriptions of Turkish-dominant bilinguals differed from those of monolinguals for some items but there was no general increase in the common extensions of Turkish and Dutch TRMs. A general preference for the use of the locative marker resulted in a larger common extension of *aan* and *-de* but non-congruent uses of *-de* increased as well.

Similar to Dutch-dominant bilinguals,

(a) Turkish-dominant bilinguals did not adopt the Dutch distinction of kinds of attachment for Turkish or the lack of such a distinction for Dutch.

(b) They did not adopt the Turkish distinction of ground objects for Dutch (with the possible exception of the ‘earring in the ear lobe’ item) or the lack of such a distinction for Turkish.

(c) They did not adopt the Turkish lack of a distinction between ‘on’ and ‘above’ relations for Dutch. Note, however that for the item ‘lamp above table’ most participants located the lamp relative to the ceiling rather than the table.

As the extension maps suggested that the items in the shared extensions of the TRM pairs *alt*/*onder*, *çın*/*üst*, and *-de* and *aan* were less prone to differences between the participant groups than items in the language-specific extensions of the TRMs, we calculated the proportions of changes in TRM use between monolingual and bilingual speakers for the two kinds of items. Of the 61 items that monolingual native speakers described using any of the eight TRMs, 31 were common-extension items and 30 were not. Figure 11 shows that the majority of differences were due to changes in the TRMs used in the Turkish descriptions and mainly occurred for items that were not in the common extensions of monolingual participants.
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Figure 11: Proportions of changed TRMs in the spatial descriptions of the two bilingual groups for items that were in the common ('yes') or the language-specific ('no') extensions of TRMs in the spatial descriptions of the two monolingual groups.

Based on our observation that in the majority of cases the TRMs used by the bilingual participants had in fact also been used by at least some monolingual speakers we, furthermore, reasoned that there might be a relationship between the consistency (or lack thereof) with which monolingual speakers used a particular TRM and the likelihood that bilingual speakers used the same or a different TRM. This was indeed the case. As can be seen in Figure 12, the average number of native speakers using the preferred TRMs of a monolingual group was lower for those TRMs that changed in the bilingual groups.
Figure 12: Relationship between consistency of TRM use in monolingual speakers (mean number of speakers using the most frequently used TRM, max = 15) and change in TRM use in bilingual speakers.

We conducted separate stepwise (forward model) logistic regressions for the four Language by Group combinations to assess the predictive values of the predictors Common Extension (item was in common extension of monolingual groups or not) and Consistency (number of monolingual participants using preferred TRM for this item) for the binary outcome Change (same or different TRM used by monolingual and bilingual participants for this item). For all four Language by Group combinations, including the predictor Consistency significantly improved the models (see Table 4), suggesting that items with lower consistency (i.e., a higher number of monolingual speakers deviating from the most frequently used TRM) were more likely to be described with a different TRM by bilingual speakers. As indicated by similar Odds Ratios, this effect was of comparable magnitude for the four Language by Group combinations. Adding the additional predictor Common Extension only improved the model for changes in Turkish TRMs by Dutch-dominant bilinguals significantly (There was a non-significant trend for Turkish-dominant bilinguals, $p < 0.1$), confirming that Dutch-dominant bilinguals were more
likely to use TRMs that differed from those of Turkish monolinguals for incongruent items. Common Extension had no significant influence on changes of Dutch TRMs. Adding the interaction term Common Extension-by-Consistency improved none of the four models.

Table 4: Regression analysis of predictors for changes in Turkish and Dutch TRM use

### Changes in Turkish TRMs by Turkish-dominant bilinguals

**Final Model** (Chi$^2$ = 28.09, df = 1, p = 0.000, Nagelkerke $R^2$ = 0.54)

| 95% Confidence Interval for Odds Ratio |
|---|---|---|---|
| $B$ (SE) | $p$ | lower Odds Ratio | higher Odds Ratio |
| Constant | 5.395 (1.627) | | |
| Consistency | -0.753 (0.207) | 0.000 | 0.314 | 0.471 | 0.706 |

### Changes in Turkish TRMs by Dutch-dominant bilinguals

**Model 1** (Chi$^2$ = 17.18, df = 1, p = 0.000, Nagelkerke $R^2$ = 0.36)

| 95% Confidence Interval for Odds Ratio |
|---|---|---|---|
| $B$ (SE) | $p$ | lower Odds Ratio | higher Odds Ratio |
| Constant | 3.328 (1.223) | | |
| Consistency | -0.491 (0.145) | 0.001 | 0.461 | 0.612 | 0.813 |

**Final Model** (Chi$^2$ = 32.45, df = 2, p = 0.000, Nagelkerke $R^2$ = 0.60)

| 95% Confidence Interval for Odds Ratio |
|---|---|---|---|
| $B$ (SE) | $p$ | lower Odds Ratio | higher Odds Ratio |
| Constant | 2.641 (1.600) | | |
| Consistency | -0.659 (0.202) | 0.001 | 0.351 | 0.522 | 0.776 |
| Common Extension | 3.286 (1.042) | 0.002 | 3.470 | 26.731 | 205.893 |

### Changes in Dutch TRMs by Turkish-dominant bilinguals

**Final Model** (Chi$^2$ = 9.76, df = 1, p = 0.002, Nagelkerke $R^2$ = 0.34)

| 95% Confidence Interval for Odds Ratio |
|---|---|---|---|
| $B$ (SE) | $p$ | lower Odds Ratio | higher Odds Ratio |
| Constant | 4.317 (2.481) | | |
| Consistency | -0.617 (0.249) | 0.013 | 0.331 | 0.540 | 0.879 |

### Changes in Dutch TRMs by Dutch-dominant bilinguals

**Final Model** (Chi$^2$ = 7.73, df = 1, p = 0.005, Nagelkerke $R^2$ = 0.25)

| 95% Confidence Interval for Odds Ratio |
|---|---|---|---|
| $B$ (SE) | $p$ | lower Odds Ratio | higher Odds Ratio |
| Constant | 3.140 (2.042) | | |
| Consistency | -0.474 (0.207) | 0.014 | 0.426 | 0.622 | 0.909 |
**Congruence of TRMs in Turkish and Dutch**

So far, we have identified some factors influencing changes in the choice of TRMs between monolingual and bilingual speakers but still need to assess whether such changes resulted in a greater congruence of the use of Turkish and Dutch TRMs. We calculated the congruence of the four TRM pairs in the Dutch and Turkish descriptions of the two bilingual groups in the same way as for the monolingual participant groups. As shown in Figure 13 (left panel), compared to the Dutch and Turkish descriptions of the monolingual groups and the Turkish-dominant bilinguals, the descriptions of Dutch-dominant bilinguals had a considerably higher congruence value for the TRMs üst and op and a slightly higher value for the TRMs iç and in. Turkish-dominant bilinguals had a higher congruence value for the TRMs -de and aan.

![Figure 13: Congruence values based on most frequently used TRM per group (left panel) and mean congruence values of individual participants (right panel). See main text and Figure 3 for the calculation of congruence values. (n.s. = not significant, * \( p < 0.05 \), ** \( p < 0.01 \); üst/op, iç/in, and -de/aan: independent t-tests, \( df = 28 \), two-sided; alt/onder: Mann-Whitney-U-Test, exact significance, two-sided)](image)

These congruence values indicate increases in extension overlap for the TRMs that were most frequently used by a participant group as a whole. However, they do not indicate to what extent individual speakers used corresponding Turkish and Dutch TRMs for the same pictures and, in principle, group-wise congruence increases could have occurred without corresponding increases in the congruent usage by individual speakers. For the two bilingual groups we, therefore, additionally calculated individual congruence values (Congruence, = the number of pictures for which participant \( i \) used the two TRMs in Turkish and Dutch divided by the number
of pictures for which participant i used one of the two TRMs in Turkish or Dutch). These values allowed for statistical comparisons between the two bilingual groups. The mean individual congruence values of Dutch-dominant bilinguals (see Figure 13, right panel) were significantly higher than those of Turkish-dominant bilinguals in the use of üst and op as well as iç and in. Even for the TRMs alt and onder that already showed full congruence at the group level for Turkish-dominant bilinguals (see left panel) there was a significant increase in individual congruence values for Dutch-dominant bilinguals indicating a higher proportion of congruent items per participant. By contrast, there was no significant difference between Turkish- and Dutch dominant bilinguals in the individual congruence of aan and -de, suggesting a special status of this TRM pair.

2.4. Discussion

In this study, we investigated the use of TRMs in elicited Turkish and Dutch descriptions of static topological relations in Turkish/Dutch bilinguals and native speakers of the two languages that did not know the other language. Our results on monolingual speakers are informative with respect to differences in the expression of static spatial relations between Dutch and Turkish. As these differences are the background, against which specific hypotheses about transfer or convergence in the spatial descriptions of bilingual participants can be formulated, we will first discuss the monolingual data.

Spatial descriptions in Turkish and Dutch monolingual speakers

The spatial descriptions we elicited from native Turkish speakers in Turkey complement the corresponding data on almost fifty languages collected by Bowerman and Pederson (1992a, 1992b summarized in Bowerman & Choi, 2001) and Levinson and Meira (2003) using the same elicitation tool. Based on observed implicational hierarchies, Bowerman and Pederson (1992a, 1992b) ordered the different kinds of spatial relations on a scale from prototypical ‘on’ situations to prototypical ‘in’ situations (see Table 5).
Table 5: Extensions of Dutch & Turkish TRMs on the ‘on-in’ scale (Bowerman & Choi 2001)

<table>
<thead>
<tr>
<th>Situation type</th>
<th>(a) Support from below</th>
<th>(b) “Clingy” attachment</th>
<th>(c) Hanging over/against</th>
<th>(d) Fixed attachment</th>
<th>(e) Point-to-point attachment</th>
<th>(f) Full inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples</td>
<td>cup on table</td>
<td>raindrops on window, spider on wall</td>
<td>picture on wall</td>
<td>telephone on wall</td>
<td>apple on twig</td>
<td>apple in bowl</td>
</tr>
<tr>
<td>Dutch</td>
<td>op</td>
<td>aan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkish</td>
<td>üst</td>
<td>-de</td>
<td>uç</td>
<td>iç</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If, for example, a language uses a particular TRM for (a) and (c) situations, then it uses that TRM also for (b) situations. Languages differ with respect to the number of TRMs used to cover the scale and with respect to the border positions. English, for example, uses on for (a) - (e), and in for (f). Bowerman and Choi (2001) mention Dutch as having a rather exceptional pattern with *op* for (a) and (b), *aan* for (c) - (e), and *in* for (f). Our data on Dutch confirm this pattern. Another pattern found, for example, in Japanese and Korean uses “one term for (a) and another for (f). Neither term is used for (b) - (e); these situations are covered instead by a general locative word or inflection - also applicable to (a) and (f) - that indicates only that there is some spatial relationship between the Figure and the Ground, normally understood as the most canonical one for the objects in question.” (Bowerman and Choi, 2001: 486).

Our data suggest that Turkish is close to this pattern, using *üst* for (a) and *iç* for (f) and the locative case marker -*de* for (b) - (d). Note, however, important differences: Firstly, the general locative inflection does not just seem to be applicable in all kinds of situations (even a prototypical ‘on’ situation, such as ‘hat on head’) but its application was always preferred, when the ground object was a body part. The second slight deviation from the described pattern is that *üst* was used for some ‘clingy’ attachment situations (raindrops on window, butter on knife) but not for others (spider on wall or ceiling), so that the borderline between the preferred use of a spatial nominal and the use of a general locative inflection does not seem to be between (a) and (b), but between different kinds of ‘clingy’ attachment situations (This is actually also the case for Dutch but with different distinctions; see Van Staden, Bowerman & Verhelst, 2006). Finally, the general locative inflection was not preferred for situations of type (e), i.e. point-to-point attachment. Instead our Turkish speakers used the spatial nominal *uç* (‘at the tip of’).

As a result, the patterns of Dutch and Turkish show interesting similarities and differences that on the one hand account for the kind of situations in the common
extensions of several TRMs and on the other hand allow for certain predictions about changes in TRM use in bilingual speakers.

As can be seen in Table 5, the distributions of Dutch and Turkish spatial terms are similar in that they overlap for situation types (a), (c), (d), and (f). The common extension of üst and op (see also Figure 9) covers type (a) situations and some type (b) situations, the common extension of iç and in (Figure 8) covers type (f) situations, and the common extension of -de and aan (Figure 10) type (c) and (d) situations. The main differences are a broader use of op compared to üst for type (b) situations, a special term for type (e) situations in Turkish, and the existence of a general locative marker in Turkish. Although the locative case shares the use for situation types (c) and (d) with the Dutch preposition aan, unlike aan it can be used in all other types of situations, suggesting that it does not denote a particular type of spatial relationship between Figure and Ground.

In the light of our results for monolingual native Turkish and Dutch speakers, we can now spell out more specific predictions based on the general expectations we derived from Muysken’s (2013) classification of bilingual optimization strategies at the end of the introduction. Given that immigrant Turkish in the Netherlands meets all of his conditions for an ‘L2 strategy’ (L2 prestige, high L2 proficiency, large numbers of L2 speakers) we expected a stronger influence of Dutch on Turkish than of Turkish on Dutch. This would mean that the Turkish pattern of spatial descriptions should become more like the Dutch pattern, and the Dutch pattern should remain relatively unchanged. Based on our results for monolingual Turkish speakers, changes in Turkish could be: (1) a higher congruence between Turkish and Dutch TRM pairs due to Turkish TRMs being used for situations they would not be used for by monolingual Turkish speakers, (2) the Turkish pattern should change toward a tripartite pattern similar to Dutch by giving up the use of a special term for situation type (e), (3) bilingual Turkish speakers might give up the distinction between body parts and other kinds of Ground objects.

However, these predictions need to be qualified. Firstly, our questionnaire data suggest that changes of the ‘L2’ type could be less pronounced for Turkish-dominant bilinguals not only because their L2 proficiency was lower but also because there was no prestige difference of the two languages in this group. Secondly, our data suggest that some TRM pairs could be perceived as similar due to a certain degree of congruence in Dutch and Turkish, but that the perceived similarity might be lower for -de and aan, because of their different syntactic status and the much broader range of possible situation types in which -de can be used. To the extent that convergence is facilitated by some kind of similarity serving as a “pivot” (Matras & Sakel, 2007) their might thus be less convergence for -de/aan.

We will now discuss our results of the bilinguals’ spatial descriptions to see whether these predictions were borne out.
Turkish and Dutch spatial descriptions by bilingual speakers

Bilingual speakers were more likely to use TRMs that differed from those used by monolingual speakers in their Turkish descriptions than in their Dutch descriptions. Both groups showed a smaller range of TRMs in general, and in particular used less TRMs such as ‘in the middle of’/ ‘to the left of’ that specify the relative location of the Figure rather than the kind of spatial relationship. Both groups, furthermore, did not show the monolinguals’ consistent use of \( uç \) (‘at the tip of’) for point-to-point attachment situations.

With respect to Turkish/Dutch TRM pairs that had some degree of congruence in the Turkish and Dutch descriptions of monolingual speakers, both bilingual groups were more likely (although not significantly so for Turkish-dominant bilinguals) to change the TRMs used for items outside the common extensions and to preserve the TRMs of items inside the common extensions. Moreover, TRMs were more likely to be changed for spatial situations for which monolingual speakers showed less agreement in their TRM use.

Whereas for Dutch-dominant bilinguals TRM changes resulted in a higher congruence of the TRM pairs \( üst/öp \) and \( iç/in \), this was not the case for Turkish-dominant bilinguals. The predominant change pattern in this group was a more extensive use of the spatially non-explicit locative case marker -de.

For Dutch-dominant bilinguals, this pattern of results is consistent with an L2 type of bilingual optimization strategy. The observed convergence is asymmetric and largely due to changes that made the extensions of Turkish TRMs more similar to their Dutch translation equivalents. It is, however, important to note that this increase in congruence was mostly due to the bilinguals using TRMs that were also used by a few monolingual speakers and hence cannot be considered as being outside of the extension of the TRM in the Turkish spoken in Turkey. To the extent that the extensions reflect the intensions or meanings of the TRMs, there is thus no reliable evidence for a change in meaning.

There was no increase in congruence between the use of the locative case marker in Turkish and the preposition \( aan \) in Dutch. This finding suggests that even for a group of bilingual speakers using an optimization strategy that involves enhancing the congruence of TRMs the mere existence of a common extension of two TRMs is not sufficient for the speakers to apply the general strategy to these two TRMs. Following up on the argument presented in the previous section, despite a common extension two TRMs do not seem to be perceived as similar if they belong to different grammatical categories (i.e. case inflection versus preposition) and/or different levels of specificity (i.e. if they are hierarchically distinct, see Levinson & Meira, 2003).

For Turkish-dominant bilinguals, the evidence for an L2 type of optimization strategy is much weaker. Although they also mainly changed the TRMs used in the
Turkish descriptions, the lack of an increase in congruence suggests that the changes are not readily explained as reflecting an L2 influence and seem to be rather due to an alternative optimization strategy. Muysken (2013) suggests that in cases of bilingual communities or individuals without a clear dominance relation between the two languages either an L1/L2 strategy (i.e. a mutual influence of both languages) or a ‘universal’ strategy may be applied. Although it is not obvious what would be a ‘universal’ strategy in the domain of spatial expressions, the use of the Turkish locative case marker might be a case in point. Levinson & Meira (2003) hypothesize (in analogy to the diachronic development of color terms) that a general locative marker may constitute the initial universal TRM, from which more specific TRMs are subsequently fractioned out. Hence Turkish-dominant bilinguals might be seen as increasing the use of a TRM that is ‘universal’ in a linguistic sense. A more psychological interpretation of ‘universal strategy’ might be something like ‘in case of conflict or insecurity use a less specific locative expression’ and Turkish just happens to offer this option.

2.5. Conclusions

The two groups of Turkish/Dutch bilinguals used different bilingual optimization strategies with Dutch-dominant bilinguals enhancing the congruence between Turkish and Dutch TRMs and Turkish-dominant bilinguals increasing the use of a topologically neutral locative marker. The kinds of strategies our two groups of bilinguals adopted are in line with predictions from Muysken’s (2013) recent framework for the interpretation of language contact phenomena. Interestingly, both strategies result in a reduction of a possible perceived conflict between the Dutch and Turkish TRMs used for certain spatial situations. It is at least plausible that this kind of conflict increases a speaker’s processing load and hence our results are consistent with the idea that contact-induced changes may serve a reduction in processing load in bilingual speakers (Matras, 2009). At the same time our data suggest that the extent to which bilingual optimization strategies are employed by speakers of immigrant Turkish is constrained by a counteracting tendency to avoid what one might call within-language conflict. The observed changes in TRM use are licensed (albeit not preferred) in the Turkish spoken in Turkey.
Abstract

Turkish has been a minority language in the Netherlands since the 1960s, when migrant workers first started moving there in search of jobs. While immigrant communities often give up their language in favor of the language of the host country, typically after the third generation, Turkish shows few signs of weakening in the Dutch context. This is true for Turkish also in other Western European countries that have attracted Turkish workers during the last four decades. This vitality, and the extended language maintenance it entails, makes the immigrant varieties of Turkish ideal test cases for theories of contact-induced language change. Speakers are overwhelmingly bilingual, and do not show signs of significant attrition or imperfect acquisition due to (severely) limited input. Our study shows that ways in which the language spoken by the immigrant communities differs from how Turkish is used in Turkey are likely to be due to contact.

Keywords: contact-induced language change, bilingualism, language production, Turkish.

*A revised version of this chapter has been submitted and accepted as a book chapter: Hülya Şahin, Ad Backus & Peter Indefrey. Resisting Contact-induced Change: Change and Stability in Immigrant Turkish. (Editors: Ad Backus and Helena Halmari). Limited Input: Circumstances and Consequences.
3.1 Introduction

Since the inception of modern contact linguistics with the publications by Uriel Weinreich and Einar Haugen in the 1950’s, many linguistic consequences of language contact have been thoroughly investigated. While codeswitching is perhaps the most intensively studied phenomenon, recent years have also seen an upsurge in the study of contact-induced structural or grammatical change (cf. Matras, 2009; Thomason, 2001). While this phenomenon already featured prominently in Weinreich (1953), it is only since Thomason & Kaufman’s (1988) articulation of the need to study ongoing changes in current contact situations to understand past changes, that its connections to other contact phenomena has been put back on the agenda of contact linguistics. The present study deals with grammatical change in an ongoing contact setting: Turkish as spoken in the Netherlands.

Contact-induced grammatical change

Various things happen to languages when they come into contact with another language. On the most general level of language choice, bilingual speakers must constantly make choices that ultimately bring about long-term maintenance or shift. Contact linguistics tends to be interested mostly in what happens to the lexicon and structure of the languages in question during this process, probably because changes under the impact of bilingualism are most easily visible in these domains.

In this paper, we contribute to the literature on contact-induced grammatical change. The contact situation in focus, Turkish in the Netherlands, is a fairly typical one: it involves an immigrant language that plays a subordinate role in society. As a result, most speakers know the socially dominant language Dutch as well: the usual pattern of acquisition is that Turkish is learned from birth, and Dutch makes its inroads as a second language used in the family domain and as the main or only language of the outside world, including school. However, details differ between individuals, and the terms L1 and L2 do not always make sense. Language choice patterns and distributions of proficiency in the two languages often shift within a person’s lifetime; by and large both languages play a significant role for most people on an everyday basis.

Turkish undergoes influence from Dutch in this situation (e.g. Doğruöz & Backus, 2009). This is particularly obvious with lexical loans, but instances have also been attested of loan translation and structural interference. The longer a contact situation lasts, and especially the more intense it is, the more of this influence is predicted (Thomason & Kaufman, 1988). However, accounting for change involves not just documenting how much of it there is, but also what kinds there are. While change can never be fully predicted, according to Johanson (2002b) some structures from the source language appear to be more attractive than others.
At the same time, some structures in the receiving language are more stable than others, and manage to resist foreign influence. Furthermore, attractiveness is relative: whether or not a particular structure is attractive in a particular contact setting partly depends on the structures of the languages involved.

The past couple of decades many case studies of contact-induced change in individual languages have emerged (such as Aikhenvald, 2002; Haase, 1992; Silva-Corvalán, 1994 and many others), and a few attempts at a more general account (see Backus, 2005; Matras, 2009; Muysken, 2013a, 2013b). Much headway remains to be made, though, since comparing the results of language contact in different contact settings involving different language pairs is not easy. The empirical basis might well be too limited still to allow clear tests of general hypotheses about attractiveness. Structural borrowing is claimed to be easier if there is some similarity between the foreign and the native structure, since similarity makes it easier to establish a translation ‘pivot’ (Matras & Sakel 2007). Likewise, analytic forms are claimed to be easier to borrow than synthetic ones (Verschik, 2008), and if a foreign structure fills a structural gap, especially if it comes with a meaning that could not be conveyed by the borrowing language before contact, the structure is borrowed relatively easily. However, all of these suggestions make use of categories that are defined fairly imprecisely, such as ‘translation equivalence’, ‘analytic syntax’, and ‘constructional meaning’. The goal of constructing a general theory of contact-induced change, particularly a semi-predictive component that pins down what determines attractiveness, would be well served if case studies would allow precise definitions. We will attempt to contribute to this goal in this paper.

**Previous research on Turkish**

The language of immigrant Turkish communities in Western Europe has been researched relatively well, perhaps only surpassed by Spanish in the United States in the attention it has received from linguists. Backus (2012) notes that various aspects of the language have been studied, including language choice (and the long-term results of maintenance and shift), acquisition by children, codeswitching, second language acquisition of the socially dominant language, Turkish-influenced ethnolectal varieties of those languages, and also quite a bit of work on contact-induced structural change in Turkish, the focus of the present article.

By and large, this literature shows that Turkish is maintained to a considerable extent, mostly thanks to the continuing influx of monolinguals from Turkey in the form of marriage partners. As most speakers grow up bilingual, there is ample room for their Turkish to be influenced by Dutch, German, Danish, etc. (as documented by e.g. Boeschoten, 1994) This does not necessarily mean they always undergo this influence directly: growing up surrounded by speakers of Immigrant Turkish leads to the acquisition of the influenced variety as their native tongue. In general, there is
much evidence for structural influence in the form of anecdotes and attested examples, but there has not been a lot of systematic study yet.

Anecdotal evidence comes from speakers who report that their Turkish is ‘no good’ when compared to the Turkish as spoken in Turkey, and that they feel uncomfortable speaking Turkish in Turkey. They feel they are being ridiculed because of their unconventional choice of words (Sevinç, 2012). Studies of codeswitching often contain, as a by-product, examples in which there seems to be some evidence of interference; pioneering studies of contact-induced change include Schaufeli (1992) and Boeschoten (2000).

The first systematic studies of contact-induced grammatical change in Immigrant Turkish appeared after 2000 (including Doğruöz, 2007; Pfaff, 1991, 1993, 1997, 2012; Keim & Cindark, 2003; Rehbein, Herkenrath & Karakoç, 2009; Treffers-Daller, 2005; Treffers-Daller, Özsoy & Van Hout, 2007). These studies all look at a particular aspect of Turkish grammar and investigate whether or not Immigrant Turkish data are different from control data collected in Turkey. An exception is Doğruöz & Backus (2009), which takes a more comprehensive view of the contact variety in an attempt to estimate roughly to what extent it has changed and in what ways.

The syntactic aspects looked at include embedded clauses, pro-drop and word order. The results are generally difficult to interpret: on the one hand, there are clearly deviations from Turkish as spoken in Turkey; on the other hand, there is so much variability that it is hard to know how general the changes are, in the sense of representing a new contact-induced variety of Turkish, with its own set of rules. In addition, the data are not always easy to compare, because of differences in how the data were collected and the types of bilinguals used as participants. Overall, the picture suggests that 1) there is not a whole lot of grammatical interference; 2) bilinguals who are more dominant in the majority language have more of it; and 3) how much interference is found also depends on the context in which the data were collected. There are few cases of constructions that would be considered ungrammatical in Turkey (Doğruöz & Backus, 2009). However, given the inter-speaker variability and the low number of speakers and of grammatical aspects investigated, there is still a great need for further studies. In the present paper, we look at case marking, so far a relatively neglected aspect.

**Case marking**

Case marking is an interesting aspect of language to look at in contact data. On the one hand, it should be relatively impervious to external influence because it is a core aspect of syntax, a domain often claimed to be very robust. In some contact situations, however, the case marking system of the borrowing language has clearly undergone changes (Bolonyai, 2002; Dutkova-Cope, 2001; Haase, 1992; Larmouth,
1974). Matras (2009: 263-4) documents how Romani varieties spoken in the Baltic and Western Russian area have changed their case marking system to become almost a carbon copy of the Russian case marking system.

Particularly relevant for our present concerns Bolonyai’s (2002) detailed study of case in American Hungarian. The Hungarian and Turkish case systems show some similarities and the languages are in a similar sociolinguistic situation: they are immigrant languages in contact with a societally dominant Germanic language. Bolonyai (2002: 18) found that in her spontaneous conversation data case marking was correct more often for accusative (92%) than for the spatial cases (79%). The types of error differ, though: accusative marking is sometimes absent where it should not be, cf. Example 1, while the spatial cases tend to get replaced by another case marker, usually one that is the more direct translation equivalent of the preposition that English uses in the equivalent expression. All but one of the accusative errors involved omission, which could, of course, also be portrayed as the use of the English translation equivalent: English does not mark direct objects morphologically. Bolonyai (2002: 19) notes that these findings confirm earlier ones about the same language: errors with accusative case involve omission.

1) American Hungarian:

\[
\begin{align*}
\text{Standard Hungarian:} & \\
Mi & \text{kap-t-unk} & \text{wood} \\
\text{We get-PAS-1PL.INDEF wood} & \\
\text{‘We got wood’} & \\
\text{Spatial cases get omitted too, but in two thirds of the errors, they were replaced by a different case marker. In most of the affected environments, pre-contact Hungarian makes a distinction which English does not make. Example 2 illustrates this for the Hungarian distinction between going to one’s home (or one’s hometown), for which it uses the illative, and going to a foreign place, for which the allative is used. This distinction breaks down in American Hungarian, the allative being used in both contexts. English uses the same preposition to for both categories. Since to is closer in meaning to the Hungarian allative, speakers have established translational equivalence between to and the allative, in the process called ‘pivot matching’ by Matras (2009), and use the allative in contexts in which English uses to. Bolonyai (2002) concludes that conceptual transfer has occurred: the English spatial concepts are now also used in Hungarian.}
\end{align*}
\]
It seems, then, that case marking is not as impervious to outside influence as is sometimes claimed. Part of the confusion is probably due to the fact that what we refer to as ‘case marking’ tends to include two fairly different kinds of reference, usually distinguished as ‘grammatical case’ (accusative, ergative, etc.) and ‘spatial (or ‘semantic’) case’ (dative, allative, locative, etc.). The two kinds of case seem to behave differently in contact-induced change, as the Hungarian examples show. Spatial cases have a more transparent meaning, and can therefore more easily be linked to a translation equivalent in the other language, e.g. a spatial preposition. The use patterns of that preposition can then influence the use of the case marker. Spatial markers are characterized by extensive figurative use and semantic extension, and such extensions are likely to be different per language. This is ideal breeding ground for interference. Grammatical case markers, on the other hand, mark syntactic roles such as direct object or ergative subject, and therefore have less transparent meaning. If semantic matching with a translation equivalent facilitates contact-induced change (Matras 2009), then semantic case markers should undergo interference more easily than grammatical case markers. Johanson (2002b) links the robustness of grammatical case markers to the fact that they are acquired early by children (Slobin, 1982, 1985, 1986); features acquired early tend to be stable, even in attrition situations (Keijzer, 2010). Ultimately, this probably has to do with high frequency of use, and, therefore, high degrees of entrenchment.

The borrowing of actual case marking morphemes is very rare; foreign influence usually takes the form of the altered use of native markers. Turkish has six case markers, some grammatical and some spatial, with sometimes complicated usage patterns. Since Dutch has no case marking at all, the Turkish-Dutch language contact situation could be expected to feature erosion of the Turkish case marking system. This issue is central to the present study. It will be introduced in the next subsection, which also includes a brief description of the Turkish case markers and their Dutch equivalents.
3.2. The present study

In the current paper, we will take a systematic look at a Turkish-Dutch corpus to see how big a proportion of case marking contexts is affected, and which contexts are particularly vulnerable. On the basis of the literature and earlier work on this language pair, we would not expect sweeping changes in the case marking system, but a certain incidence of change in particular contexts. Our research question is whether there is indeed a qualitative distinction between grammatical and spatial case markers in how they respond to the pressures of contact. The discussion will focus on the accusative and dative, the cases marked to encode direct and indirect objects in Turkish. Of these, the dative is also a spatial case, marking direction towards a goal.

Turkish has a relatively simple case marking system. In addition to the three cases that mark spatial relations (dative, locative and ablative), it employs a nominative-accusative system for marking grammatical relations, in which the nominative is zero-marked. Direct objects are marked accusative, as in Example 3, except if they are 'non-specific’ Example 4. The dative is used to mark indirect objects, cf. Example 5. There are also some verbs that subcategorize for the ablative case, such as korkmak ‘to be afraid’ in Example 6. Finally, there is a genitive case, which has two main uses. It marks the possessor in possessive noun phrases, as in Example 7, and it marks the subject in subordinate clauses, as in Example 8. The latter function is a result of the fact that most Turkish subordination structures involve nominalization, and the subject of the subordinate clause is indicated with a possessive morpheme on the non-finite verb that heads the clause. If there is an overt nominal or pronominal subject in the subordinate clause, in addition to that possessive agreement morpheme, it is marked with the genitive case. Overviews of Turkish case marking can be found in any of the standard reference grammars (e.g. Göksel & Kerslake, 2005; Kornfilt, 1997; Lewis, 1967) an in-depth treatment of the case marking system can be found in Nilsson’s study (1985).

3) Accusative:

Derya çay-ı içiyor
Derya tea-ACC drink-PROG.3SG
‘Derya is drinking the tea’

4) Accusative ‘non-specific’:

Derya çay içiyor
Derya tea drink-PROG.3SG
‘Derya is drinking tea’
5) Dative:
Pelin şimdi Peter-e bak-yor
Pelin now Peter-DAT look-PROG.3SG
‘Pelin is now looking at Peter’

6) Ablative:
 Yeşim Peter-den kork-yor
 Yeşim Peter-ABL be.afraid-PROG.3SG
 ‘Yeşim is afraid of Peter’

7) Genitive and possessive:
Hülya çok konuş-tuğ-u için Ad-in baş-tu-ağıri-t-ı
Hülya much speak-NMLZ-3SG because Ad-head-ache-GEN POSS.3SG-ACC CAUS-PAST.3SG
‘Because Hülya talked so much, Ad got a headache’

8) Genitive:
Ad dün gece Hülya-nın yaz-diğ-ı kitab-tı oku-du
Ad yesterday evening Hülya-GEN write-NMLZ-3SG book-ACC read-PAST.3SG
‘Last night Ad read the book that Hülya wrote’

Dutch, on the other hand, has no overt case marking. Historically, the language had the common Germanic nominative-accusative system of grammatical cases, also involving genitives and datives, but in the modern language only remnants survive in the pronominal paradigm, which has two forms for each personal pronoun. These are usually referred to as the subject and object forms, reflecting both their current functions as well as their origin as nominative and accusative/dative forms, respectively. Importantly though, nouns are not marked for case in Dutch, so that for all intents and purposes, case is non-existent. Instead, grammatical relations are marked by word order. Spatial relations are marked by prepositions, not case markers.

A first hypothesis could be that we should expect omission of the case marker to be the dominant pattern in NL-Turkish, since Dutch does not have overt case markers. However, there are a few reasons for not advancing this as our main expectation. First, given the transparent meaning of spatial cases, we should expect these to be perceived as equivalent to Dutch prepositions, and therefore not to be omitted. Second, focusing on the accusative, omission has not been widely reported in earlier studies of NL-Turkish, so we might as well expect this case at least to be robust. Third, the rules for accusative marking in Turkish are not very straightforward. Definite and specific direct objects are marked accusative but non-specific and indefinite direct objects are left unmarked (one could also say that these
are marked with the nominative case). The absence of this distinction in Dutch could influence its erosion in Turkish, but the outcome of this could be universal accusative marking for all direct objects as much as it could be increased omission. Fourth, Patient arguments are sometimes not marked with the accusative but with the dative. Often, this concerns verbs that are low in transitivity, so that the object nouns are often Theme rather than Patient arguments. In many of these cases, Dutch does not treat these arguments as direct objects either, instead using prepositions such as naar ‘to’, the closest equivalent of the Turkish dative case.

Assuming NL-Turkish speakers settle on pivots for translation, we could expect the following pivot relationships to be made regarding direct objects:

a) Dutch direct object - Turkish zero-marked object (i.e. omission of accusative)
b) Dutch direct object - Turkish accusative marking (i.e. generalized use of accusative)
c) Dutch prepositional object - Turkish dative marking

The first two expectations are mutually exclusive, as one results in loss of accusative (which would be a direct contact effect: structural borrowing from Dutch), and the other in universal marking of direct objects with accusative case (and this would be an indirect contact effect: loss of a subtle distinction, either because Dutch does not make it or because speakers do not have enough exposure to Turkish to internalize the rules for differential object marking). Given general impressions of NL-Turkish, the second of these expectations is more likely: speakers of NL-Turkish may well strengthen the association between accusative marking and direct object status.

There is another hypothesis that could be entertained. Dutch has unmarked direct objects and objects of prepositions. Though we are not aware of any psycholinguistic research that has investigated whether or not these two structures ‘feel’ different to Dutch speakers, we will assume that the unmarked direct object, such as sport in Example 9, is the prototypical direct object for Dutch speakers, while the prepositional object je in Example 10 is felt to form an adverbial constituent with the preposition. We could expect the verb-object structure as instantiated in Example 9 to act as a pivot in Turkish-Dutch contact: Dutch-dominant speakers may establish equivalence between this construction and accusative marking in the Turkish equivalent. Verb-object combinations that are especially sensitive to this kind of alternation may be low-transitive verbs such as ‘look’. Languages differ in the extent to which they encode objects of such verbs as direct objects or not; the alternation between two different ways of encoding it in Dutch (exemplified in 9 and 11) is a case in point.
9) Direct object:

Ik kijk sport op zondagavond  
I watch sport on Sunday evening

10) Prepositional object:

Ik wacht op je zondagavond  
I wait on (for) you Sunday evening

11) Prepositional object:

Ik kijk naar een sportprogramma op zondagavond  
I watch (to) a sport program on Sunday evening

This leads to the following hypothesis for two-argument clauses in contact data: if the Dutch equivalent would have a transitive structure with a direct object, NL-Turkish will use accusative case, even in environments in which TR-Turkish leaves the noun unmarked or uses a different case marker, such as dative. This hypothesis would be in line with the theory that contact-induced change results from a combination of attrition, interference and linguistic features as causal factors. Attrition is the result of lack of sufficient exposure and use of TR-Turkish conventions, which leads to insecurity about their use (basically proficiency in using them goes down); interference would entail Dutch exerting some influence because of the sensitivity to whether or not the affected noun would be used as a direct object in Dutch. Finally, the linguistic factor of transitivity may regulate which object nouns will be perceived as ‘enough’ of a direct object to ‘deserve’ the accusative marker.

All this makes it useful to have a closer look at the fate of case marking in Dutch Turkish. While it would be unrealistic to expect sweeping changes in the case marking system, we do expect to find occasional cases of unconventional case marking. While our discussion will focus on the accusative, the overall focus on direct objects will also make it necessary to look at the use of the nominative and the dative, as these are sometimes used to mark direct objects as well.

Research questions

Since preliminary analysis revealed that there is some unconventional case marking in the data, we ask the following questions, motivated by the literature reviewed above:

- What differences in case marking do we find between NL-Turkish and TR-Turkish?
- What explains the cases of unconventional case marking?
3.3. Research design

In order to investigate patterns of case marking in the language use of Turkish/Dutch bilingual speakers, we used part of a corpus collected by the second author and his associates between 2002 and 2007. This section provides information on these data (Section 2.1) and the selected participants (Section 2.2). The final subsection details how the material was annotated for further analysis.

Corpus material

The conversational data were collected by a team under the direction of the second author (cf. Doğruöz & Backus, 2009). The corpus consists of recorded interviews with Turkish-Dutch bilinguals and comparable monolinguals in Turkey. The conversations are mainly one-on-one interviews with one of two research assistants, who presented themselves as monolingual Turkish speakers. This way, the incidence of codeswitching was minimized, a step that was deemed necessary as the original study was interested in the structure of Turkish, rather than in codeswitching, or the informants’ Dutch. In most cases, interviewer and informant did not know each other beforehand; as a result the recordings capture everyday speech as used in a relatively formal setting (rather than in-group vernacular). During the interviews, participants gave information about their daily lives, personal backgrounds and their linguistic practices. One of the research assistants was in reality a Turkish-Dutch bilingual, and she was often unable to suppress her natural tendency to switch back and forth between her two languages in everyday conversations with fellow bilinguals. Her conversation partners often followed suit and started codeswitching as well. Very little codeswitching occurred in the data with the other, truly monolingual, interviewer.

Participants

As mentioned above, the Backus corpus consists of more than 100 recorded interviews. Not all of these data were transcribed, however, when we started this study, and we decided to only use a random subset of 29 transcribed recordings. In order to be able to make a comparison between Turkish-dominant and Dutch-dominant speakers, we made sure we had roughly equal amounts of data for the two groups, which resulted in 14 Turkish dominant bilingual speakers (hereafter TDB) and 12 Dutch dominant bilingual speakers (hereafter DDB) and 3 more or less monolingual Turkish native speakers (hereafter TN).

The division was made according to when participants had had their first contact with Dutch. ‘Dutch dominant speakers’ are defined as participants who were under twelve when they had their first exposure to Dutch, while ‘Turkish dominant speakers’ were at least twelve years old when they immigrated. At the start of the
interviews, participants provided background information on language use, including daily patterns of language use as well as the age of arrival in the Netherlands. They also provided information on their level of education. While age of the onset of L2 acquisition is not always a reliable indicator of language balance in bilinguals\(^4\), earlier experience with the Turkish community does show that it tends to correlate well with relative proficiency in the two languages, so we felt it was a good first indication (also see Birdsong, 2006, Brown, 2007; Gullberg, Indefrey & Muysken, 2009 for general information on this issue).

The 29 transcripts were checked and improved, and then analyzed to identify cases of unconventional language use. From the data set, seven interviews (3 DDB and 3 TDB and 1 TN) were statistically analyzed.\(^5\) In our general overview, however, we use the complete data set.

**TN speakers**

Though we checked the language use of three monolingual Turkish native speakers, in this study we only analyze one speaker. Şenay was 26 year old, and had come to the Netherlands only a year before the recording. Like the Turkish-dominant speaker Seher (see next subsection), she has a university degree from Turkey. She was taking a Dutch course, but obviously reported speaking mostly Turkish in her everyday life.

**Turkish dominant bilingual speakers**

This group consists of three speakers, two women and one man, who all had arrived in the Netherlands after the age of 12. All participants lived in the Netherlands at the time of recording, and the length of their exposure to Dutch ranged from 5 to 27 years. They all reported to speak more Turkish than Dutch in their everyday lives, and also to watch more Turkish than Dutch television.

Nermin was 26 years old, and the mother of two children. Her husband is from Turkey and spoke no Dutch when he came to the Netherlands. She speaks Dutch with the children and Turkish with her husband. She was 13 years old when she

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\(^4\) An example from the first author’s family is that of her youngest two sisters, who arrived in the Netherlands as babies (6 months and 1.5 years). They spent their first 12 years in the Netherlands, but went back to study in Turkey between the ages of 12 and 18 and 24, respectively. That is, even though they spent their first 12 years in the Netherlands, Turkish was their predominant everyday language during adolescence. This has affected their language dominancy so that they qualify as Turkish dominant bilinguals. This type of mixed exposure is common for many Turkish bilinguals in the Netherlands and it shows us that we have to be careful when categorizing participants according to language exposure.

\(^5\) Initially we aimed to analyze the language use of all 26 participants. However, this analysis appeared to be too time-consuming and we decided to analyze only 7 interviews.
came to the Netherlands, and had done the first three years of the lise, the Turkish high school. She continued her education for six years in the Netherlands, at a higher vocational school (HBO).

Can was 40 years old, and had been in the Netherlands since he was 13. He has two children and reported that he speaks both Dutch and Turkish with them. He had had seven years of Turkish education, and when he came to the Netherlands continued in a Dutch high school and later finished an HBO program.

Seher was 26 years old, and had been in the country for five years. She has a university degree from Turkey. Upon emigrating, she took a Dutch course. She is single and speaks mostly Turkish in her daily life, also since she works in a Turkish youth centre.

**Dutch dominant bilingual speakers**

This sample consisted of three women: Gül, Nur and Filiz. They were all born in the Netherlands, and had lived there all their lives. Their ages ranged from 19 to 24 years. During their childhood, they spoke Turkish with their parents, but by now all three reported to speak more Dutch than Turkish in their everyday lives (or equal amounts, in Gül’s case), that their Dutch is much better than their Turkish, that they feel much more comfortable when speaking Dutch, and that they watch more Dutch than Turkish television. Gül, 24 years old, was studying at university. Nur, 19 years old, had just finished high school; and Filiz, 22 years old, was studying Business Management and Business Law at a local college. She was the only one who said that Dutch was her mother tongue. The demographic background data of the participants are summarized in Table 1.

Table 1: Participant characteristics

<table>
<thead>
<tr>
<th>DDB</th>
<th>TDB</th>
<th>TN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gül</td>
<td>Filiz</td>
<td>Nur</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nermin</td>
<td>Can</td>
<td>Seher</td>
</tr>
<tr>
<td>24</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td>13</td>
<td>27</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of arrival</td>
<td>Duration of stay</td>
<td>Age</td>
</tr>
<tr>
<td>24</td>
<td>19</td>
<td>22</td>
</tr>
<tr>
<td>30</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>26</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Coding of corpus material**

In this section we describe how we analyzed the data. The recorded interviews were first transcribed by a research assistant in the CLAN format. The first author checked and improved the transcripts. The data were then transferred into Excel, and segmented into utterances. The basic principle for segmentation was that every verb phrase with its argument(s) and any adjuncts were considered a clausal unit.
Subordinate clauses were treated as separate units but marked as part of the same utterance as their main clause. Every utterance was given a unique number, so that we could easily count the number of utterances per participant. In addition, every case marker was identified as accusative, genitive, dative, locative, or ablative.

In the final step, every morpheme, including the case markers, was coded as either conventional or unconventional, in which ‘unconventional’ is defined as not in agreement with the norms of TR-Turkish, and every case of unconventionality was marked as involving omission, addition or replacement. This was done on the basis of the intuitions of the coder (the first author, a native speaker who spent the first fifteen years of her life in Turkey and has worked as a teacher of the language), but all cases of suspected unconventionality were later subjected to the judgments of a panel of six native speakers to confirm or disconfirm the initial impression. In addition, a second coder, who had just come from Turkey and was being trained as a linguist, carried out the same coding for unconventionality in the entire corpus. There was little disagreement between the two annotators; when this was the case, the judgment of the second annotator was decisive.

This provided us with a set of cases classified as ‘unconventional usage’. As a final step, we entered the unconventional combinations in Google. We often found similar instances on websites outside Turkey and on websites which bilingual speakers visit. We also checked their occurrence on websites from Turkey to find out whether these constructions or expressions could also be familiar to TR-Turkish speakers. It turned out that most of them were not found there, and if they were, they were often produced by bilingual speakers, e.g. Turkish-Dutch, Turkish-German, and Turkish-Swedish.

To give an impression of what the data look like, we include Table 2, which illustrates our analysis of unconventional language use in general. Table 3 depicts fragments of a short conversation between the interviewer (INV) and the participant (HAB). The rightmost column shows whether or not the utterance is conventional. In case of unconventionality, an indication is given of what is unconventional and what the conventional equivalent would be. The present paper, however, will only focus on case marking; none of the three types of unconventional language use will be of interest here.
Table 2: Example of coded data

<table>
<thead>
<tr>
<th>UTTERANCE SEGMENTATION</th>
<th>Conventionality 1 YES, 0 NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>İlk başta bi kaç özel soru sormak istsıyorum size</td>
<td>1</td>
</tr>
<tr>
<td>‘First of all I want to ask you some questions.’</td>
<td></td>
</tr>
<tr>
<td>Kaç yıl Hollanda’daşınız</td>
<td>(*yıl &gt; yıl-dir)</td>
</tr>
<tr>
<td>How many year Holland-LOC</td>
<td>0</td>
</tr>
<tr>
<td>‘How long have you been in Holland?’</td>
<td></td>
</tr>
<tr>
<td>Kaç dil konuşursunuz</td>
<td>(* konuşmak &gt; bilmek)</td>
</tr>
<tr>
<td>How many language speak</td>
<td>0</td>
</tr>
<tr>
<td>‘How many languages do you speak?’</td>
<td></td>
</tr>
<tr>
<td>Anadılıınız nedir</td>
<td>1</td>
</tr>
<tr>
<td>‘What is your mother tongue’</td>
<td></td>
</tr>
<tr>
<td>Bu tür sorular</td>
<td>1</td>
</tr>
<tr>
<td>‘This kind of questions’</td>
<td></td>
</tr>
<tr>
<td>Hepsi ne arkaya mı cevaplıyacam (*Hepsin-e &gt; Hepsin-i)</td>
<td>0</td>
</tr>
<tr>
<td>Everything-DAT after after-DAT questionParticle answer</td>
<td></td>
</tr>
<tr>
<td>‘Do I have answer them one by one?’</td>
<td></td>
</tr>
<tr>
<td>Türkiye’den geldim işte</td>
<td>1</td>
</tr>
<tr>
<td>‘As you see I am from Turkey.’</td>
<td></td>
</tr>
</tbody>
</table>

3.3.1. Overall results

To contextualize the case marking data, this section will provide a brief overview of the unconventional language use that we encountered in the data. The next section will then go into unconventional case marking.

Overall degree of unconventionality

We first calculated the percentages of unconventional utterances per participant, as seen in the bottom row of Table 4. For example, Gül used a total of 938 words in her interview, in 132 utterances, of which 56 (i.e. 42%) were used in an unconventional way. This was done for all participants, and Table 3 represents their scores. For the DDB group, the mean ratio is 25.3 % with a large standard deviation of 14.8. This is due to the high incidence of unconventionality in the speech of one of the three participants (Gül). Even though the unconventionality ratio was not so high for the other two DDB participants, they still have a slightly higher ‘score’ than the TDB speakers. However, it is clear that Gül is an extreme case.
Table 3: Total word usage and unconventionality ratio per participant

<table>
<thead>
<tr>
<th></th>
<th>DDB</th>
<th>TDB</th>
<th>TN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gül Filiz Nur Nermin Can Seher Şenay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of words</td>
<td>938</td>
<td>1640</td>
<td>3163</td>
</tr>
<tr>
<td>Total utterances</td>
<td>132</td>
<td>311</td>
<td>708</td>
</tr>
<tr>
<td>Unconventional utterance usage</td>
<td>56</td>
<td>58</td>
<td>119</td>
</tr>
<tr>
<td>Unconventional utterance ratio</td>
<td>42%</td>
<td>19%</td>
<td>17%</td>
</tr>
<tr>
<td>Average ratio</td>
<td>$M = 25.3$</td>
<td>$SD = 14.8$</td>
<td>$M = 11.1$</td>
</tr>
</tbody>
</table>

As we will see in Section 4, a clearer difference between the two speaker groups emerges when we focus on case marking only. First, however, we will provide some more information on unconventional language use, and will see that the overall quantitative differences hide more subtle differences between the three groups.

Unconventionality in different categories

It turned out that the participants differed in the degree to which they produced different kinds of unconventional structure. All cases of unconventional language use were coded as either of a lexical, a syntactic or a morphological nature. The basic data are given in Table 4.

The DDB and TDB groups clearly have different patterns of unconventional language use. In the TDB group, the TR-Turkish morphology is still relatively intact, but in the speech of the DDB participants a lot of the unconventionality is of morphological nature. On average 57% of their unconventional language use concerns morphology, while for the TDB speakers this percentage is much lower ($Mean = 24\%$). For the Turkish-dominant bilinguals, deviations from the TR-Turkish norm are mostly found in the lexicon ($Mean = 62\%$); the relative proportion of lexical types of unconventionality, while still high, is lower for the DDB group ($Mean = 34\%$), due to the relative prominence of morphological unconventionality. In other words: it appears that in the DDB group, we see signs of ongoing morphological change, including changes in the case marking system.
Table 4: Total unconventional utterance ratio per participants per category

<table>
<thead>
<tr>
<th></th>
<th>DDB</th>
<th>TDB</th>
<th>TN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gül</td>
<td>55%</td>
<td>66%</td>
<td>23%</td>
</tr>
<tr>
<td>Filiz</td>
<td>60%</td>
<td>30%</td>
<td>22%</td>
</tr>
<tr>
<td>Nur</td>
<td>50%</td>
<td>34%</td>
<td>29%</td>
</tr>
<tr>
<td>Nermin</td>
<td>23%</td>
<td>22%</td>
<td>28%</td>
</tr>
<tr>
<td>Can</td>
<td>22%</td>
<td>28%</td>
<td>26%</td>
</tr>
<tr>
<td>Seher</td>
<td>28%</td>
<td>17%</td>
<td>18%</td>
</tr>
<tr>
<td>Şenay</td>
<td>17%</td>
<td>18%</td>
<td>17%</td>
</tr>
</tbody>
</table>

Unconventional accusative marking

This section will present the results for case marking. First, a general quantitative overview is given of the degree to which case marking is unconventional in the speech of the selected participants. Section 4.2 is the heart of the analysis, and illustrates the various kinds of unconventional usage per case marker, focusing on the accusative, and attempts to account for the deviations from the TR-Turkish norms.

Quantitative data

Table 5 presents an overview of case marking in the data. For each speaker and each case marker, we calculated the ratio of unconventional use. In general, the data confirm the picture given in Table 5 above, with more unconventional marking in the speech of the DDB participants. There is considerable difference across the different markers, however, as well as between individual participants. The zero-marked nominative is not included in the table. Zero marking was only coded when an expected case marker was absent.
The rows in the table represent case marker usage per participant. Speakers range from 3% to 31% in their ratio of unconventional use of the accusative case. DDB speakers clearly have more unconventional case marking than TDB and TN speakers. The columns show that speakers differ in their unconventionality rates across the different case markers. Gül, for example, has a relatively high ratio in accusative contexts (31%), while her use of the ablative case shows no unconventionality at all. The quantitative data do not tell us anything, however, about the lexical and grammatical contexts in which the unconventional case marking tends to occur. We turn to a qualitative analysis to see whether there are any recurring patterns, and to get a handle on what causes the unconventional marking, i.e. whether there is evidence for Dutch influence or not.

**Qualitative analyses**

We now turn to the actual tokens of unconventional case marking, focusing on the accusative. The following subsections each deal with one of the three logically possible types of unconventional marking: addition where it is not expected, omission where it is expected, and replacement by another case marker is expected.
(or accusative replacing a different case marker). In every case, we will examine whether or not Dutch influence can be posited as the source of the unconventionality. Occasionally, to illustrate a point, we will also use examples that have been taken from other participants in the larger corpus.

In total, our core participants produced 44 instances of unconventionality in which the accusative is involved. This figure is not high: there were 373 tokens of accusative use in which it was used in accordance with TR-Turkish conventions. The total ratio of unconventionality for accusative use is, therefore, only 12%.

### Table 6: Unconventional accusative usage

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omission</td>
<td>13</td>
</tr>
<tr>
<td>Addition</td>
<td>23</td>
</tr>
<tr>
<td>Replacement</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
</tr>
</tbody>
</table>

In 13 cases, the accusative was ‘missing’, in 23 cases it was used where TR-Turkish would have zero marking, and eight times it replaced one of the other case markers. As we will see, the subcategories hide considerable variation as to the ultimate source of the unconventional usage. Roughly, it was caused by interference from Dutch only sometimes, usually in the form of a loan translation, and more often the likely cause is contact-induced loss of TR-Turkish conventions, probably because of lack of exposure. This explanation often requires further explanation in terms of ‘universal’ factors, such as the tendency to leave out the accusative in contexts of low transitivity.

**Omission**

Example 12 illustrates one of the thirteen times the accusative marker was missing, at least when judged from the perspective of TR-Turkish. The noun ‘programs’ functions as the direct object of ‘make’, and the co-occurrence with a demonstrative pronoun makes it definite. Definite direct objects require accusative marking, but the speaker left the noun bare.

12) NL-Turkish: Nur (DDB)

Şimdi o **program-lar** yap-abil-ir-sin

Now that **program-PL** make-can-PRES-2SG

‘Now you can make those programs.’
Since Dutch has no accusative morpheme, an explanation in terms of external, i.e. Dutch, influence is always possible, but the same holds for the alternative explanation that the loss of the TR-Turkish convention is caused by relatively low exposure to TR-Turkish, an internal development. It is difficult to say which of these explanations applies; possibly, they both play a role exhibiting ‘multiple causation’ (Dorian, 1992, 1999).

We investigated all 13 cases of missing accusatives to see whether a pattern can be discerned. In order to see whether they could reliably be analyzed as instances of direct Dutch influence, we checked whether the Dutch rendition of the same referential content would use a parallel structure, i.e. a transitive construction. In addition, we looked for evidence of loan translations, which would suggest a more lexical type of influence rather than a more structural one. However, we also checked for possible internal sources of change, particularly whether a low degree of transitivity of the verb may have played a role. We based this on Hopper and Thompson (1980) who distinguish ten formal and semantic features. Since we were only interested in a general approximation, we simplified their categorization by looking at arguably the most important features: whether the agent is acting voluntarily, whether the agent is actively doing something, and whether the object noun is affected. Note that this explanation would not apply to the abovementioned example, ‘make’ being highly transitive.

As for the structure of the Dutch equivalents, in ten out of thirteen cases, this was a transitive construction as well. For these, the relatively simple explanation that the Dutch pattern, characterized by the absence of overt case marking, is transferred to Turkish remains a possible explanation. However, note that in the great majority of cases (N=380), the accusative morpheme is used in accordance with TR-Turkish conventions, so at the very least we still need to account for why the accusative is omitted in exactly these thirteen cases. For that, we turn to the other two factors.

We first check whether the omission may be part of a loan translation. This may be the case if the NL-Turkish form uses words that are the translation equivalents of the closest Dutch equivalent combination, and TR-Turkish uses different words to convey the same meaning. Turkish speakers in Holland often make use of the combination tren almak ‘to take the train’, a combination not used in TR-Turkish, but which is similar to the Dutch combination, which also uses the words for ‘train’
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and ‘take’ (Doğruöz & Backus, 2009). TR-Turkish, in contrast, uses tren e binmek ‘train-DAT get.on’. If we would get an occurrence of tren almak without an accusative, the omitted accusative could be analyzed as a by-product of the loan translation. To see whether this holds for the 13 cases of omitted accusatives in our data, we checked whether there was this lexical correspondence between the words used in the Turkish phrases and those used in their closest Dutch equivalents.

The strongest evidence for loan translation would be when the NL-Turkish collocation is unattested in TR-Turkish but equals the Dutch convention. There are no clear loan translations among the examples of omitted accusatives, so we may conclude that at least in these data omitting the accusative is rarely the by-product of loan translation. However, Dutch pressure may have a reinforcing influence. In many cases, TR-Turkish, Dutch and NL-Turkish simply all use the same verb-object combination. Two examples are two different ways of saying ‘to abolish Turkish lessons’, both attested in the data and both missing the accusative, see Examples 13 and 14. The first is the combination of ders ‘lesson’ and kaldırmak ‘to lift up’ in the meaning ‘to abolish lessons’. This may look like a strange combination at first sight, but both Dutch and Turkish use a verb for ‘to lift up’ (Dutch opheffen and Turkish kaldırmak) with figurative meaning in the collocation ‘abolish Turkish classes’: Turkse lessen opheffen is the colloquial Dutch expression and Türkçe derslerini kaldırmak is an everyday Turkish collocation. The figurative meaning of ‘to lift up’ in this expression happens to be used by both languages, though it is unclear how common the expression really is. The expression in (14) seems to be used more frequently: Türkçe derslerini vermek istememek ‘not want to provide lessons’. In both cases, one could simply say that the selection is the continuation of a TR-Turkish convention, but also that it is both that and a selection reinforced by co-activation of its Dutch equivalent, which happens to share the same lexical basis.

13) NL-Turkish:

Gelecek-te Türkçe ders-ler-i kaldırmak ist-iyor-lar
Future-LOC Turkish lesson-PL.POSS lift.up want-PROG-3PL

‘In the future, they want to abolish Turkish lessons’

TR-Turkish:

Gelecek-te Türkçe ders-ler-i ni kaldırmak ist-iyor-lar
Future-LOC Turkish lesson-PL.POSS-ACC lift.up want-PROG-3PL

Dutch:

Ze willen Turkse lessen opheffen
They want Turkish lessons abolish
14) NL-Turkish:
Bir de Türkçe ders-i sınıf diş-i ver-mek istiyor-lar 
One.also Turkish class-POSS classroom out-POSS give-INF want-PROG-3PL
‘In addition, they want to give the Turkish lessons outside the curriculum’

TR-Turkish:
Bir de Türkçe ders-i-ni öğretim program-i diş-in- ver- istiyor-lar 
One.also Turkish class-POSS education programme-out give want-
ACC POSS POSS INF PROG-3PL

Dutch:
Bovendien willen ze de Turkse les buitenschools geven 
In.addition want.3pl they the Turkish lesson outside.school give.INF

However, one may wonder what would constitute support for the reinforcement hypothesis. The scenario would be plausible in cases where TR-Turkish uses another combination or expression than the attested one more frequently; the Dutch equivalent may then well have the effect of pushing out the TR-Turkish convention. Reinforcement would not be a possible explanation, of course, if NL-Turkish uses a collocation that is equivalent to the one used in TR-Turkish, but that differs lexically from its Dutch equivalent. This would be the case if an NL-Turkish speaker uses trenen pinmek for ‘take the train’.

Frequency measurements may help. In the case of the examples given above, both NL-Turkish combinations are used in TR-Turkish: dersleri kaldırmak istiyorlar (‘they want to abolish lessons’) and dersleri vermek istemiyorlar (‘they do not want to provide the lessons’), but the latter is much more frequent than the former. In the absence of reliable Turkish corpus data, we conducted an informal Google search, and found a huge difference in frequency between the two forms: only 830 hits for dersleri kaldırmak istiyorlar versus 1,110,000 for dersleri vermek istemiyorlar (Google search on 1 May 2013). This suggests that Dutch does influence the selection of dersleri kaldırmak istiyorlar. It is normally rare in discourse, and generally immigrant varieties of Turkish are described as impoverished lexically compared to TR-Turkish, which mostly means that rare words are not used at all anymore. This would be in line with the oft-reported finding that when faced with the choice between two possible ways of saying something in a language, bilinguals will often settle on the alternative that resembles most the unmarked way of saying it in the other language (Heine & Kuteva, 2005; Matras, 2009). The combination with opheffen, the equivalent of kaldırmak, is fairly frequent in Dutch. Recall we also found this tendency in the adposition use of Turkish-Dutch bilinguals, reported in Chapter 2.
Finally, omission of the accusative could also be due to low transitivity, by itself or in collaboration with the contact-induced reasons discussed above. However the 14 verbs that occur unconventionally without accusative in the data are equally distributed over contexts of low and high transitivity. Eight verbs were coded as low transitive; their English translations are realize, see, tell, ask, know, determine, find and require; the other six were coded as high in transitivity: finish, teach, remove, give, improve and do. Transitivity does not seem to play a determining role in accusative omission, and this picture is confirmed if we take into account the overall frequency of low and high transitive verbs: accusative is omitted in eight out of 208 instances of low transitivity and in six out of 199 cases of high transitivity.

In conclusion, we can say that accusatives are omitted on a very limited scale. It is not immediately obvious that the cases we found are the result of Dutch influence, whether as direct grammatical borrowing or as a by-product of loan translation. It is also not the case that they are typically found in contexts of low transitivity. In the next subsection, we will see whether the same conclusions can be reached when an accusative case marker is added rather than omitted.

Addition

As Table 6 shows, there were another 23 cases in the data where an accusative was used where it was not required according to TR-Turkish conventions. A typical example is the following:

15) NL-Turkish:  
Brak-ir-sa yani para-ı yazı kazan-a-maz galiba  
Quit-PRES.3sg-COND so money-ACC more win-ABIL-NEG.3sg probably  
‘If he quits [his job], he can not make much money, you know’

TR-Turkish: fazla para ‘more money’  
Brak-ir-sa yani fazla para kazan-a-maz galiba  
Quit-PRES.3sg-COND so more money win-ABIL-NEG.3sg probably

Dutch:  
Als hij stopt kan hij niet veel geld verdienen  
If he quit.3sl can he not much money earn

In the TR-Turkish equivalent, no accusative marker would be used because the direct object is generic. Indefinite and generic direct objects are left bare in Turkish (or, one could also say, marked with nominative case). On the face of it, Dutch structural influence would be unlikely as an explanation for the added accusative, since Dutch does not have an accusative case marker: Dutch direct objects are all
“bare”. Note that the example does not show any Dutch lexical influence, i.e. loan translation, either: as the Dutch translation shows, Dutch uses a different verb in this construction, ‘earn’, while Turkish uses ‘win’. The TR-Turkish lexical convention is actually maintained despite “ideal” conditions for a loan translation to appear. Therefore, the obvious sources of possible Dutch influence do not apply.

There is another way, though, in which the unconventionality may be caused by contact. The Turkish system of using accusative case only in some contexts (definite direct objects) may be vulnerable to outside influence if the other language does not make this difference at all. Perhaps, NL-Turkish speakers have become insecure about the opposition between the two types of direct objects, and end up marking all direct objects in the same way. One might object that non-use of the accusative would be more natural, since Dutch does not use a morphological marker to indicate direct object status. However, note that accusative-marked objects are probably more frequent than non-marked objects (most direct objects being definite), and using accusative for all direct objects would make the overall case marking system more transparent: nominative for subjects and accusative for direct objects. What is borrowed from Dutch, then, is the structural feature of not making a distinction between two kinds of direct objects. Alternatively put, a distinction not made in the source language is being lost.

To be sure, the data do not show massive addition of accusative in contexts where TR-Turkish would not use it. We can only suggest, therefore, that there is some indication that this change may be ongoing, but is still at an early stage. Furthermore, in this case too, there may be some evidence for multiple causation. The change seems to be led by contexts of high transitivity (note that kazanmak ‘win’ is relatively high in transitivity), which may serve as an extra trigger for accusative usage, since the direct object ‘feels’ more like a direct object in such contexts than in one of low transitivity, e.g. with verbs of cognition such as ‘think’.

We will now examine the complete list of tokens in which an accusative was used unconventionally. Except for one subordinate clause that functions as direct object, most of the cases are simple object-verb combinations: ‘read a book’, ‘buy a newspaper’, ‘broadcast a radio program’, ‘study Dutch’, etc. (see Appendix 1 for the full list). The unconventionality resides in the marking with accusative of a direct object that is generic or indefinite. In two cases, accusative is suffixed to the complement of a copula, in one case to the complement of an existential verb. These last three cases are hard to interpret, and we’ll set them aside for now.

In most cases, the actual object-verb combination is conventional, so there is little evidence of loan translation. On the other hand, in the majority of cases Dutch and Turkish use essentially the same combination, so that the selection of lexemes may be motivated by TR-Turkish convention alone, or by a combination of TR-Turkish convention and reinforcement from Dutch (see the discussion in the section on omission above). There are only two clear cases of loan translation. One concerns
the combination Türk kanallarını çekmek (‘receive Turkish channels’), to describe that it is possible to watch TV channels from Turkey in Holland, through the use of satellite dishes), which is probably based on Dutch Turkse kanalen ontvangen, while the most common TR-Turkish way of saying this would be türk yayınlarını izlemek (‘see Turkish stations’). The other putative loan translation is more contentious, and is given in the next example.

16) NL-Turkish:

Türkiye’de de okul-u bitir-di-m
Turkey-LOC as well school-ACC finish-PAST.1SG
‘I have finished school in Turkey as well’

TR-Turkish:

Türkiye’de de okul/okul-a bitir-di-m/gittim
Turkey-LOC as well school/school-DAT finish-PAST.1SG/go-PAST.1SG
‘I went to school in Turkey as well’

Dutch:

Ik heb de school ook afgemaakt in Turkije
I have the school also finished in Turkey
‘I have finished school in Turkey as well’

The most common TR-Turkish form is different from what the speaker produced: either okul-a git- ‘go to school’ (school-DAT go) or okul-u oku- ‘read school’ (school-ACC read). One Dutch equivalent is school afmaken, i.e. ‘finish school’, so also a combination of a direct object and a verb, and using the most direct translation equivalent of bitirmek, so the NL-Turkish form looks like it may well be a loan translation. However, there are other ways of conveying this information in Dutch as well, and the context does not actually give us enough information to say for sure what exact shade of meaning was intended here. Therefore, while the accusative case might be a ‘by-product’ of a loan translation, as it involves the selection of a highly transitive verb (‘finish’), we should be cautious in accepting this explanation as the only correct one. This is unfortunate, perhaps, but also not untypical when dealing with spontaneously produced conversational data.

The next example contains the accusative-marked subordinate clause.

17) NL-Turkish:

Neyin nereye git-tiğ-i-ni bil-in-sin
What where go-SUB-POSS.3SG-ACC know-PASS-OPT.3SG
‘They should let them know what goes where’
The verb *bilinsin* does not require accusative. It is the passive form of the verb ‘to know something’, and thus is intransitive. The subordinate clause is the subject. Note, however, that it is also semantically the ‘Theme argument’, which in the active equivalent would be the direct object and require accusative case. It does not seem far-fetched to imagine that the subordinate clause ‘felt’ like an object clause to the speaker, and thus triggered the accusative case marker.

We finally turn to transitivity. Many verbs on our list are high in transitivity; see Appendix 1 for the full list of verbs that occur with unconventional accusative marking and the scores we gave them on the feature ‘transitivity’. The only exceptions are: understand, listen, see and happen, and the abovementioned copula ‘be’, existential ‘be’ and ‘know’. Recall that the previous sub-section showed that omission of the accusative occurred predominantly with verbs low in transitivity. This is in line with our hypothesis that high transitivity promotes the use of the accusative case marker as it creates more prototypical object-verb combinations, and thus strengthens the transitive schema.

The data seem to support the hypothesis that NL-Turkish has embarked on a change in which the link between direct object status and accusative marking is solidified. Accusative usage is spreading to environments in which it is not used in TR-Turkish, i.e. contexts in which the direct object is indefinite and generic and the verb is highly transitive. Two things seem to be going on at the same time. In cases of low transitivity, the direct object is sometimes not recognized as a direct object (see the previous subsection), while in cases of high transitivity, all direct objects are treated as such. That would mean that the basis for accusative marking is changing, moving away from reliance on genericness and definiteness, and towards reliance on degree of transitivity. This would be in line with the basis of direct object marking in Dutch, where arguments of low-transitive verbs are often marked with a preposition, and thus not as direct objects.

Dutch interference does not play a role in this scenario, but the change, if that is, what it is, is very likely a contact-induced one just the same. Contact limits experience and exposure to Turkish, and this weakens the entrenchment of the patterns of marking and non-marking. The resulting confusion leads speakers to sometimes use the accusative when it is not supposed to be used, and, as we saw in the previous subsection, to omit it where it should be used. As with other ongoing
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changes in this variety of Turkish (see Doğruöz & Backus, 2009; Backus, Doğruöz & Heine, 2011), only a few examples are found, and most of the time the conventions of TR-Turkish patterns are obeyed. This suggests that the change is in its early stages. Whether or not it will propagate is impossible to say at the moment, at least not on the basis of conversational data like ours. In other work (Şahin, Backus & Indefrey forthcoming), we report data from judgment tasks that throw more light on this issue, and they tend to confirm the picture sketched here.

Replacement

Finally, the accusative marker replaced another case marker in four cases, while it got replaced itself in another two instances. We start with the unconventional use of accusative. In four of the five instantiations it is the dative that gets replaced. In these cases, the verb happens to subcategorize for the dative, but, crucially, the dative meaning is not very transparent, as there is no movement involved towards the object.

Example 18 is a straightforward case. The verb başla-‘to begin’ subcategorizes for a dative object in TR-Turkish, but in this NL-Turkish example the object ‘travel agency’ is marked with accusative case.

18) NL-Turkish:
Seyahat büro-su-nu başla-di
Travel agency-POSS-ACC begin-PAST.3SG
‘(He) started up a travel agency’

b. TR-Turkish: Alternative 1
Seyahat büro-su-na başla-di
Travel agency-POSS-DAT begin-PAST.3SG

Dutch:
Hij is een reisbureau begonnen
He is a travel agency started

The accusative may have been triggered as well by the existence of a couple of synonymous collocations in TR-Turkish which do use the accusative, in combination with two different verbs ‘to open’ and ‘to build’. With this particular object noun, these collocations are actually more frequent, according to Google searches, than the combination with başla ‘to start’.
c. TR-Turkish: Alternative 2

Seyahat büro-su-nu aç-ti/kur-du
Travel agency-POSS-ACC open-PAST.3SG/build-PAST.3SG

The verb başla- is part of a group of Turkish verbs that govern dative case and that have in common that they tend to take a verbal complement. Other verbs in this category include karar ver- ‘decide’, devam et- ‘continue’, and çalı-ş- ‘try’. Dative marking is probably due to the low transitivity of such combinations (the verbs essentially function as auxiliaries rather than as transitive verbs governing a direct object). However, note that in the NL-Turkish example, the object is a concrete noun (‘travel agency’), leaving the verbal noun complement of başla- (something like ‘operating’) implicit. This may well be the result of loan translation, as in Dutch such combinations of beginnen ‘start’ and a nominal direct object are common. If the speaker was producing a loan translation of een reisbureau beginnen’, the construal of seyahat bürosu as a direct object, triggering accusative case is fairly natural. Once more, we conclude that the explanation of the specific example involves several possible causes which may well work together: loan translation, pivot matching of accusative marking and direct object status, and erosion of TR-Turkish conventions.

The other two examples involve accusative marking of the object clause in the constructions it is necessary to OBJ and cause it to OBJ. There is also a case in which the accusative replaces the instrumental marker. Interesting things can be noted about all examples, but since these are the only examples of its kind we will refrain from doing so at this point.

Replacement of accusative by other case marker:

There are also two examples in which an expected accusative is replaced by another case marker. In Example 19 a dative is used on the verbal noun in ‘forgot to tell’ instead of the accusative normally required by unut- ‘forget’.

19) NL-Turkish:
San-a anlat-ma-ya unut-tu-m
you-DAT tell-NMLZ-DAT forget-PASS-1SG
‘I forgot to tell you’

TR-Turkish:
San-a anlat-ma-yi unut-tu-m
you-DAT tell-NMLZ-ACC forget-PASS-1SG
The main verb _unutmak_ ‘to forget’ is low in transitivity and this may have triggered the use of the dative. The fact that the complement is a subordinate clause may further conspire in making the context one of low transitivity. While we saw in Section 4.1 that accusative case is sometimes omitted in such environments, this is probably felt to be ungrammatical in the case of verbal nouns, which never appear without case markers when they head subordinate clauses. The combination _anlatmayı unuttum_ would therefore be pre-empted.

The other illustration Example 20 involves replacement of the accusative with the ablative, in conveying the meaning ‘reading about something’.

20) NL-Turkish:

<table>
<thead>
<tr>
<th>Subject-PL</th>
<th>Konu-lar-dan</th>
<th>Oku-ma-yı</th>
<th>Sev-er-im</th>
</tr>
</thead>
<tbody>
<tr>
<td>That</td>
<td>read-NMLZ-ACC</td>
<td>love-PRES-1SG</td>
<td></td>
</tr>
</tbody>
</table>

*I like reading about these issues’

TR-Turkish:

<table>
<thead>
<tr>
<th>Subject-PL</th>
<th>Konu-lar-tı</th>
<th>Oku-ma-yı</th>
<th>Sev-er-im</th>
</tr>
</thead>
<tbody>
<tr>
<td>That</td>
<td>read-NMLZ-ACC</td>
<td>love-PRES-1SG</td>
<td></td>
</tr>
</tbody>
</table>

Dutch:

<table>
<thead>
<tr>
<th>Subject-PL</th>
<th>Lees graag</th>
<th>Over deze onderwerp-en</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>read with pleasure</td>
<td>about these issue-PL</td>
</tr>
</tbody>
</table>

The use of the ablative case is clearly unconventional: in addition to our own intuitions, a Google search (date: 17-05-2013) gave only six hits for _konulardan okumak_ (versus 13,000 hits for the accusative-marked _konuları okumak_). It is likely that the ablative is the result of Dutch influence, as the Dutch equivalent collocation uses the preposition _over_ , which is often translated with the ablative case in Turkish (similar examples have been quoted elsewhere in the literature about Immigrant Turkish, e.g. Boeschoten, 2000).

3.3.2. Summary

We briefly sum up the empirical results presented above. Our data show some, but not much, unconventional use of accusative case in the conversational data from Turkish-Dutch bilinguals, especially in those of speakers we consider Dutch-dominant on the basis of their biographical details. Sometimes the case marker was
omitted where it was expected; a little more often it was added where it was not expected. Replacement by or of another case marker happened only rarely. The sources of unconventionality are not uniform. In a minority of cases, the lexical combination of verb and object suggested a loan translation from Dutch, but in general loan translations proved hard to prove. In many cases, there is complete lexical overlap of the two languages involved, making it impossible to tell whether Dutch merely stimulated the further use of the conventional combination or played no role at all. Overall, the impression is that contact is contributing to a slow breakdown of the case marking system by reducing the entrenchment levels of the conventional patterns for accusative marking. Speakers who are Dutch-dominant show signs of uncertainty in the contexts in which a direct object is not conventionally marked with accusative case, opting to mark direct objects that are not marked in TR-Turkish. This is especially the case in contexts of high transitivity, in which direct object status is relatively salient. However, since the number of tokens is so low, this change is at a very early stage still. It seems to be caused by a combination of limited experience with monolingual Turkish and direct influence from Dutch. Below, we will explore the possible explanations in more detail, relating our findings to the general literature on contact-induced change.

3.4. Discussion and conclusions

We will first review the findings in the light of changes in Immigrant Turkish in general and in comparison with other contact settings (Section 3.1). We then focus in the subsequent section on the possible explanations for the changes we uncovered.

Contact effects in Immigrant Turkish

The findings are more or less in line with earlier findings about the Turkish spoken by the immigrant communities in Holland and elsewhere in Western Europe. The members of these communities tend to be thoroughly bilingual, and as a result they show various contact effects in their Turkish, but not to such an extent that their Turkish has become unintelligible to speakers of TR-Turkish (in Turkey). The case marking data show the same picture we have seen before for word order (Doğruöz & Backus, 2007), use of overt subject pronouns (Doğruöz, 2007), and constructional changes in general (Doğruöz & Backus, 2009): there are isolated examples of unconventionality but there is no systematic change. Cases of unconventional case marking are best interpreted, we argue, as isolated cases of interference or other types of contact-induced change, and represent early stages of change. Whether or not they will develop further into what may once become a systematically changed case marking system is at present hard to say, since it depends on social factors that
we cannot predict. The most we can say is that if Turkish is maintained as a minority language for another generation, use of Dutch by its speakers continues to increase, and contact with TR-Turkish decreases, the changes may well solidify into new conventions. This expectation is based on what has happened in other language contact situations, with other languages, in which contact-induced change has been allowed to run its course for centuries, i.e. situations in which the language being influenced was not given up by its speakers despite continuing domination by a socially dominant contact language.

If we look at the data as providing a snapshot of the early stages of contact-induced language change, several aspects need to be noted. First, change is apparently fairly slow. Turkish has been in contact with Dutch for four decades now, and the speakers who provided us with the data have two potential sources of Dutch influence: they have learned their Turkish at least partially from speakers who themselves have undergone Dutch influence, and they are likely to suffer constant interference from their Dutch on their Turkish, Dutch being the dominant language in their lives. All things considered, it seems noteworthy that there is so little evidence of contact-induced change in their Turkish. If the case marking system is indeed changing, it does so at a very slow pace, and most of the case marking is still conventional, i.e. in line with TR-Turkish conventions. On the other hand, as a morphosyntactic domain within clausal syntax, case marking may perhaps be expected to have a slow rate of change. Several models of contact-induced change claim that change proceeds faster at the more global level of discourse marking than in the more tightly integrated system of clausal syntax (Aikhenvald, 2002; Matras, 2009). Indeed, the highest rate of change in Immigrant Turkish found so far for any syntactic domain is that of clause combination. Backus & Onar Valk (2013), they report much higher rates of unconventionality for Turkish subordinate clauses, which are often constructed with a finite verb in Immigrant Turkish, while TR-Turkish prefers non-finite subordinate clauses. Dutch, which has finite subordination, has presumably exerted influence here.

Nobody has ever claimed, as far as we know, that change must proceed at the same pace in different subsystems of a language, but on the other hand, the models of contact-induced change are relatively silent about what kinds of differences we should expect. Claims such as the abovementioned one that change starts out in more global domains related to discourse structure, and that clausal and, especially, phrasal syntax, change later (the ‘from big to small’ claim of Aikhenvald, 2002), can of course be interpreted as meaning that one will find more advanced change, at any given moment in time, in discourse structure than in phrasal structure, and that is exactly what the cumulative evidence from Dutch Turkish so far seems to show. However, why do we find this pattern? Specifically relevant for our present concerns, why is accusative marking relatively stable?
Bolonyai (2002) found quite significant changes in the accusative-marking system of American Hungarian. Considering the similarities between Turkish and Hungarian on the one hand, and English and Dutch on the other hand, and considering as well the similar sociolinguistic circumstances of American-Hungarian and Dutch-Turkish, both being immigrant languages, it is surprising that we found so little evidence of contact-induced change. In addition, most of Bolonyai’s examples seemed to involve direct English influence.

In conclusion, we suggest that it makes little sense to ask the question we asked at the outset, whether or not accusative case, or even case marking in general, is vulnerable to contact effects. If we are to arrive at any degree of predictability about contact-induced change, we need to work at much more concrete levels, focusing on concrete pivot elements. Sweeping statements about the attractiveness of typological categories are likely to meet with complicated counterevidence time and again. That is fine as long as it serves to trigger more investigation, but we should probably not be too optimistic about the possibility to find more detailed hierarchies than the famous borrowability hierarchies that are to apply universally.

**Multiple causation**

We have claimed above that there is no uniform source for the instances of unconventional case marking we found. Specifically, they cannot all be attributed to Dutch influence. Theoretically, it would have been possible that unconventionality in accusative usage would have taken the form of massive omission of the case marker, since Dutch lacks such a marker. This is clearly not what we found: omission does not happen all that often, it is just one of the types of unconventionality, and many of the cases of omission could not be unambiguously attributed to Dutch influence.

The picture that emerged from our analysis was that some individual cases of unconventionality were caused by interference from Dutch, while others seemed to be the result of a general loosening of the degree to which the norms of TR-Turkish were adhered to. It was hypothesized that within this overall context of direct and indirect contact-induced change, language-internal factors would help determine in what contexts the change would propagate the most. The prime candidate for such a factor was transitivity, since earlier accounts had suggested that accusative would be omitted especially in cases of low transitivity. This could not be confirmed in the present study. On the other hand, a trend seems to be in evidence that unconventional addition of accusative took place especially in contexts of high transitivity. Such contexts are exactly the ones where conceptualizing the object argument as a prototypical direct object is easiest; accusative addition could then reflect a growing trend to mark all direct objects with accusative, eroding the difference between marked and unmarked direct objects in Turkish. Taken together,
this suggests that ‘multiple causation’ is the best explanation for the observed changes.

Our initial hypothesis was that many instances would best be characterized as loan translations, on the assumption that it is more plausible that the accusative would be omitted in verb-object combinations that were literally translated from Dutch. This assumption itself rested on another assumption: that ‘accusative case’ is too abstract a unit to serve as the basis for the pivot matching that is at the heart of cross-linguistic interference. Omission of the accusative, that is, was hypothesized to be a by-product of the adoption of a Dutch verb-object combination (which obviously lacks an overt case marker). However, many cases of unconventionality involved the *addition* of an accusative marker, and even the omission cases featured few unambiguous loan translations. This is not to say that loan translation as a mechanism plays no role at all. However, in many cases the two languages use the same combination of a particular verb and a particular object noun, so that Dutch influence at most was of a reinforcing nature. Be that as it may, loan translation seems to have little to do with unconventional case marking.

The most plausible mechanism behind unconventional case marking is the loosening of TR-Turkish norms. As those norms are reinforced to a lesser degree than in Turkey, since speakers are exposed less to TR-Turkish speech in its various genres, speakers are hypothesized to become uncertain about certain aspects of the language, as a direct consequence of lessened degrees of entrenchment. This uncertainty translates into sometimes just getting it wrong. This would account for the lack of systematicity: from the viewpoint of TR-Turkish, the case marking in the data looks like it is done mostly correctly, but with some mistakes here and there. If left unchecked, it is likely that this development will continue, more uncertainty leading to more ‘errors’, and ultimately some or many of those errors solidifying into new conventions in Immigrant Turkish. In this perspective, the ultimate reason for the changes is simply reduced usage of TR-Turkish.

However, as we already indicated, the ‘errors’ are not random. Though the data are too limited to do more than speculate, it appears that the degree of transitivity at least has some influence on what we get. The picture this suggests is that general lack of access to TR-Turkish makes various aspects of TR-Turkish grammar less entrenched and therefore vulnerable to change, particularly subsystems that have inherent variability such as accusative marking, and that the specifics of the change in this case are partly sensitive to language -internal factors, making contexts of low transitivity vulnerable to accusative omission and contexts of high transitivity to accusative addition. Reduced usage of and exposure to the original variety, and increased usage of and exposure to another language, is the ultimate cause of the change, and various internal (degree of transitivity, non-transparent basis of variation) and external (interference, loan translation) factors function as proximate causes.
The interpretations we offer above are not incompatible with existing models of contact-induced change. On the other hand, it may be seen as remarkable how little of what we have documented above classifies as actual borrowing, or PAT borrowing in Matras’ (2009) terminology. We found relatively little direct Dutch influence on Turkish case marking. This makes it difficult to interpret the findings in the light of theories such as Matras (2009), Heine & Kuteva (2005) or Myers-Scotton (2002), as these approaches focus on what is taken directly from the other language. Instead, we argued that contact also has a more indirect effect, which, in the case of case marking at least, seems to be more important in terms of explaining behavior: contact limits experience with the old norm. Lessening degrees of entrenchment cause insecurity about those norms, and the result is increased variability. Whether or not this will lead to a new stabilized NL-Turkish system in which case marking is different from what it is in TR-Turkish is at present impossible to tell.

This suggests that Matras’ framework can be usefully expanded, and he shows the way himself. The driving force behind convergence, he suggests, is the desire to reduce processing load, and one way of achieving this is by merging the structures of the two languages. Our data suggest a twist: reduced exposure to ‘difficult’ norms creates the need to simplify the system. Difficulty may be conceptualized as subsystems that lack in transparency and have inherent variability. Accusative marking in Turkish qualifies: not all direct objects are marked with accusative, and explaining the system requires subtle linguistic description. The latter is a sure sign that the rules that regulate marking and non-marking are not known by speakers in a conscious way. To be sure, they may well have metalinguistic knowledge about it, having learned the rules explicitly in school, but even then, it is unlikely that those rules, referring to definiteness and specificity of the nominal referent, are attended in rapid speech. Speakers of TR-Turkish do it right because they have enough experience with the underlying constructions. Speakers of NL-Turkish have less relevant experience and the degree of entrenchment of the constructions may sometimes sink below a threshold. Uncertainty is the result. In such situations, the unconscious hunt for ways of reducing the processing load may lead to a new, simpler system. Accusative in Turkish, it appears, is vulnerable because of its variability, not because of anything in Dutch that is imposing itself.

At present, there seem to be two competing drives towards system change. On the one hand, there is the drive towards universal accusative marking, using it for every direct object. In our data, this results in accusative addition. On the other hand, there is the drive towards discarding the accusative, perhaps helped along by the fact that Dutch does not have an accusative. This results in accusative omission. Once again, we cannot say where this is going, but impressionistic evidence from how Turkish is used in the NL-Turkish speech community would favor the first trend, and we cautiously hypothesize that future stages of NL-Turkish may start to show
accelerating extension of the use of the accusative case marker, at least in canonical contexts with clearly transitive verbs (as opposed to verbs of cognition, for instance) and nominal objects (as opposed to argument clauses, for example).

**Suggestions for future research**

The data suggest several possibilities for further research. First, the database can be extended to include a wider selection of participants. In fact, we have a much larger corpus that still awaits annotation; our results encourage us to extend the research quantitatively. However, there is only so much one can do with corpus data. As a final note of discussion, we want to argue for the inclusion of other data sources that could weigh in on the issues discussed in this paper. Recall that we have often referred to aspects of language change such as entrenchment and conventionalization. The quantitative evidence we have presented is one source for an assessment of the degree to which NL-Turkish has undergone structural change, but it is not the only source imaginable. In fact, such data are relatively unsuited to the investigation of propagation. No matter how many speakers one looks at, the database will never be large enough to allow far-reaching conclusions, as there is no way of assessing the degree to which the chosen speakers are representative of the community. For that, one would have to look at the language use of perhaps a hundred or more speakers, something which is clearly not feasible given the time needed for dealing with conversational data.

However, there are other methods which may actually be better suited to the investigation of how change spreads. In another study, we have conducted a judgment task, in which we asked a large number of Turkish-Dutch participants to provide judgments, on a 1-10 scale, of structures and lexical combinations we consider typical of NL-Turkish, interspersed with filler items (which mostly reflected TR-Turkish conventions). Future work could focus such a task on accusative usage. It would yield data that allow statistical comparison of the degrees of integration of various types of unconventional accusative marking, across the different groups of bilinguals. At a further step, carefully constructed psycholinguistic experiments could be designed, to see whether unconventional structures can be elicited under controlled conditions. Combining different data sources may lead to converging evidence, but it may also lead to insights about differences between people’s production and their receptive capabilities. In a related study, for example, Onar Valk & Backus (forthcoming) found that Dutch-dominant bilinguals appeared to avoid the use of TR-Turkish subordination structures, replacing them with more Dutch-like structures, in production data, while still ranking the TR-Turkish conventions as high as the NL-Turkish ones (the ‘unconventional’ ones). This suggests that change may show itself in production
while the old inherited equivalent is still well entrenched in competence. Future studies using a more diverse methodology could unravel these issues.
## Appendix 1: Corpus sentences

<table>
<thead>
<tr>
<th>Omission of accusative</th>
<th>English Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Çocuklarınızla Türkçe ana dili öğretiyosunuz?</td>
<td>Are you teaching your kids your native Turkish tongue?</td>
</tr>
<tr>
<td>ana dilini / Türkçe 'yi</td>
<td></td>
</tr>
<tr>
<td>Böyle bir şey sen de fark ettin mi?</td>
<td>Did you realize such a thing too?</td>
</tr>
<tr>
<td>şeyi</td>
<td></td>
</tr>
<tr>
<td>Sen bazı değişiklikler görüyor musun Türkiye' de?</td>
<td>Do you see any changes in Turkey?</td>
</tr>
<tr>
<td>değişiklikleri / Türkiye'ye gittiğinde bu değişiklikleri görüyor musun?</td>
<td></td>
</tr>
<tr>
<td>Gelecekte Türkçe dersleri kaldırmak istiyorlar.</td>
<td>In the future, they want to abolish the Turkish classes.</td>
</tr>
<tr>
<td>derslerini</td>
<td></td>
</tr>
<tr>
<td>Birde Türkçe dersi sınıf dışı vermek istiyorlar.</td>
<td>In addition they want to give the Turkish class outside the curriculum.</td>
</tr>
<tr>
<td>dersini</td>
<td></td>
</tr>
<tr>
<td>(Ablam) Türkçe kendisi geliştirdi.</td>
<td>(She) improved (it) herself.</td>
</tr>
<tr>
<td>Türkçesini</td>
<td></td>
</tr>
<tr>
<td>Şimdi o programlar yapabilirsin.</td>
<td>Now you can make these programs.</td>
</tr>
<tr>
<td>programları</td>
<td></td>
</tr>
<tr>
<td>Türkçe felan bi şey bilmedin mi Hollandaça söyleyorsun.</td>
<td>When you do not know Turkish, they say it in Dutch.</td>
</tr>
<tr>
<td>şeyi</td>
<td></td>
</tr>
<tr>
<td>Bazen anlamadıkları olduğunda bana soruyor.</td>
<td>Sometimes if she does not understand it, she asks me.</td>
</tr>
<tr>
<td>anlamadıklarını</td>
<td></td>
</tr>
<tr>
<td>Artı yüzdelere karalay pileri bulma</td>
<td>Additionally, finding the percentages, squares and pi’s</td>
</tr>
<tr>
<td>yüzdeleri</td>
<td></td>
</tr>
<tr>
<td>İşte LTS o dönemi bitirdin.</td>
<td>I finished LTS in that time period.</td>
</tr>
<tr>
<td>LTS’i</td>
<td></td>
</tr>
<tr>
<td>Masaya oturunun bilene belirliyor konum.</td>
<td>The way you sit on a chair is defining your position.</td>
</tr>
<tr>
<td>konumu</td>
<td></td>
</tr>
<tr>
<td>Bu seviyede Hollandaça dikkatli okunak gerekiyor.</td>
<td>It should be read carefully Dutch at this level.</td>
</tr>
<tr>
<td>Hollandaçaçı</td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>Original Text</td>
</tr>
<tr>
<td>--------</td>
<td>---------------</td>
</tr>
<tr>
<td>1</td>
<td>Türkçe 'de okulu bitirdiniz mi? okul</td>
</tr>
<tr>
<td>2</td>
<td>Türkçe de dili de değişir. dil</td>
</tr>
<tr>
<td>3</td>
<td>Bazen gazeteyi okuduğum zaman gazete</td>
</tr>
<tr>
<td>4</td>
<td>Okulda Hollandaça eğitimi görüyor. eğitimin</td>
</tr>
<tr>
<td>5</td>
<td>Bırakrsa yani parayı fazla kazanamaz galiba. para</td>
</tr>
<tr>
<td>6</td>
<td>Dördümüz radyo programını yayındı. program</td>
</tr>
<tr>
<td>7</td>
<td>Ordu da okuyoruz almanca kitapları. kitaplar</td>
</tr>
<tr>
<td>8</td>
<td>Genellikle Hollandaça gazetelerini okuyoruz. gazete</td>
</tr>
<tr>
<td>9</td>
<td>Şimdi bazı yerlerde şeyler güzel oluyor. şeyler</td>
</tr>
<tr>
<td>10</td>
<td>Nevin nereye gittiğini bilinsin konusunda gittiği</td>
</tr>
<tr>
<td>11</td>
<td>Türkçe bi konuşma olurken anlamadığınız bi şey olyorumu? Türkçe</td>
</tr>
<tr>
<td>12</td>
<td>Yani bana anlattıkları şeylerı hep gizli yaptıklarımı... şeyler</td>
</tr>
<tr>
<td>13</td>
<td>Zaten iç mimarlığı yapmak istesem iç mimarlık</td>
</tr>
<tr>
<td>14</td>
<td>Babam genellikle Türkçe gazeteleri alıyor. gazete</td>
</tr>
<tr>
<td>Arabic</td>
<td>English</td>
</tr>
<tr>
<td>--------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>1.</strong> راديو تونك قنالات تركية بسبب ذلك.</td>
<td>The radio does not broadcast the Turkish channels.</td>
</tr>
<tr>
<td><strong>2.</strong> تركي كنالات</td>
<td>I do not read Turkish books.</td>
</tr>
<tr>
<td><strong>3.</strong> تركي كتب.</td>
<td>I am listening to Dutch channels.</td>
</tr>
<tr>
<td><strong>4.</strong> تلفزيون تركي</td>
<td>Let me see, may be, 5 year old</td>
</tr>
<tr>
<td><strong>5.</strong> تركي كنامل</td>
<td>I had chosen the school of technique / technical school.</td>
</tr>
<tr>
<td><strong>6.</strong> تركي كنامل</td>
<td>I usually do not let people watch Turkish TV.</td>
</tr>
<tr>
<td><strong>7.</strong> تلفزيون تركي</td>
<td>When we came, education in native language was not known.</td>
</tr>
<tr>
<td><strong>8.</strong> <em>Addition of accusative (continued)</em></td>
<td><em>English Translation</em></td>
</tr>
<tr>
<td><strong>9.</strong> <em>Derlerdi bana iç mimarlığı veya reklam üzerine öyle gibi şeyler yap diye.</em></td>
<td>They told me to do something in interior architecture or advertisement.</td>
</tr>
<tr>
<td><strong>10.</strong> <em>Zaten fazla aşk Türk televizyonu izletmiyorum.</em></td>
<td>I usually do not let people watch Turkish TV.</td>
</tr>
<tr>
<td><strong>11.</strong> <em>Ya ben az önce sana anlatmaya unuttum.</em></td>
<td>I forgot to tell you just before.</td>
</tr>
</tbody>
</table>

**Replacement of accusative**

<table>
<thead>
<tr>
<th>Arabic</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong> <em>Hollanda çocuklar seviyesinde olduğu için.</em></td>
<td>Because she is at the same level as Dutch kids</td>
</tr>
<tr>
<td><strong>2.</strong> <em>Ama fazlasıyla güzel olmasını gerek yok bizim için.</em></td>
<td>But it does not have to be very perfect for us.</td>
</tr>
<tr>
<td><strong>3.</strong> <em>Yok şimdi seyahat bürosunu başlattı ya.</em></td>
<td>No, now he started a travel agency.</td>
</tr>
<tr>
<td><strong>4.</strong> <em>Ya ben az önce sana anlatmaya unuttum.</em></td>
<td>I forgot to tell you just before.</td>
</tr>
<tr>
<td>Line(s)</td>
<td>Original Text</td>
</tr>
<tr>
<td>---------</td>
<td>---------------</td>
</tr>
<tr>
<td>5</td>
<td>Fakat beni examenatorun da zorlamasyla giriş sınavı yaptırılar.</td>
</tr>
<tr>
<td>6</td>
<td>O konulardan okumayı severim.</td>
</tr>
<tr>
<td>7</td>
<td>Bu ülkenin bu yerlere gelmesini yani biz yapmadık.</td>
</tr>
<tr>
<td>8</td>
<td>Örneğin kişileri bazı anlaşmalar yapmışlar.</td>
</tr>
</tbody>
</table>

*Note: The table entries are in Turkish and their translations are provided.*
Entrenchment of innovative language usage in Dutch-Turkish bilinguals: An experimental study*

Chapter 4

Abstract

Recent corpus studies have shown that the Turkish spoken by Dutch-Turkish bilinguals in the Netherlands contains innovative language usage: constructions and expressions that are unconventional in Turkish as spoken in Turkey but that are used quite frequently in the Netherlands. In this study, we had Dutch-dominant bilinguals, Turkish-dominant bilinguals, and Turkish native speakers perform a sentence rating experiment on conventional and unconventional (innovative) Turkish sentences. This way, we studied to what extent innovative language usage is accepted by and entrenched for Turkish speakers from different groups. The results indicate that innovative language usage was accepted more often by the Dutch-dominant bilinguals than by the other two participant groups. This is in line with the argument that (1) innovative language usage of Dutch-Turkish bilinguals in the Netherlands is based on cross-language interactions between Dutch and Turkish, and (2) that this innovative language use paves the way for contact-induced language change.

Keywords: contact-induced language change, bilingualism, language production, sentence rating experiment, Turkish.

*A revised version of this chapter has been submitted for publication. Hülya Şahin, Ad Backus, Peter Indefrey & Gerrit Jan Kootstra. Entrenchment of innovative language usage in Dutch-Turkish bilinguals: An experimental study.
4.1. Introduction

Our knowledge of contact-induced language change is for the most part based on observations of everyday language use. Often these are in the form of relatively small corpora, made up of recorded conversations or interviews (Backus, 2001, 2004, 2005). Analyses of such data have told us many things, as the language use contains various types of deviations, innovations, or what Doğruöz & Backus (2009) call ‘unconventionality’. However, while corpus analyses are good at demonstrating that a change has occurred, they are less good at indicating how widespread it is. Change starts off as an innovation, and then it embarks on a usually long path of propagation, which may go to completion, stagnate, or reverse course again (Croft, 2000). Knowing that a contact-induced phenomenon is present in the data shows us that the innovation was introduced at some point, and that propagation is ongoing, but it does not show us how far ahead the change is on this path. Corpus data can only offer frequencies, but examining frequency of use is usually not enough to assess the degree of acceptance or community diffusion, at least not in the relatively small corpora that exist for contact settings. For example, we generally do not know how representative the individual speakers in the corpus are, nor what the influence of the particular conversational context was that happened to be recorded. As a result, frequency of a particular innovative grammatical construction or lexical combination in the corpus is not really conclusive evidence for the degree to which the change has propagated. A related problem is that we also do not know whether a structure that does not occur in the corpus is indeed not used at all in the community. To deal with these problems, other sources of evidence could be considered, and this article aims to promote this point. We report on a judgment task and we will argue that it is a valuable addition to our corpus data, as it affords us better ways for tapping into issues of propagation.

The structure of this paper is fairly straightforward. First, we will discuss the importance of studying the propagation phase in contact-induced change, focusing in particular on the notion of entrenchment and the need for additional data beyond corpus data. In section 3 we present the design of the current study, based on a judgment, or, as we call it, a ‘likeability’ task. The results will be presented in section 4. In our conclusion, we will assess to what extent the data converge with corpus data, discuss the use of experimental data on entrenchment for the advancement of a theory of contact-induced language change, and close with some suggestions for further research.
Entrenchment and language change

Theoretical approaches to contact-induced change

Languages change all the time, as is obvious from any comparison of a modern language, say English, with its earlier incarnations, say Old English. The factors that drive change and determine its direction are numerous, and one of them is external contact with other languages (see e.g., Croft, 2000, 2001; Croft & Cruse 2004; Thomason, 2001 for overviews). Such language contact often leads to contact-induced change, and languages are affected by this kind of change at all levels. The lexicon, for example, is affected by the importation of loanwords and by calquing of many expressions and shades of meaning from other languages (e.g., Backus, 2010). Syntactic borrowing, the focus of the current study, is commonly observed as well. Given intense enough contact, languages have been shown to borrow structural features such as word order patterns, ways of marking grammatical categories such as possession, case and verbal aspect, and many other structural properties (Matras, 2009, 2010; Matras & Sakel, 2007; Thomason & Kaufman, 1988).

Perhaps as a result of its roots in structural and historical linguistics, contact linguistics has devoted most attention to identifying the other-language source of a change, and the degree to which the source or model and the replica or copy are identical. This has led to accounts of contact-induced change that have uncovered much about how a case of structural borrowing gets started and what may have caused it, but not so much about how a change unfolds (e.g., Matras, 2009; Muysken, 2013). In addition to the many case studies providing detailed accounts of individual contact-induced changes, there are now a few theoretical proposals which attempt to construct a larger framework intended to cover all of these cases. Following in the footsteps of pioneering attempts by Weinreich (1953) and Haugen (1950, 1956), three such frameworks may be singled out as relatively all-encompassing in their reach. The Code Copying framework is developed in Johanson (2002b) and presents a taxonomy of different kinds of contact-induced change, which all share that some aspect is taken from the other language, such as a word, a shade of meaning or a syntactic pattern (also see Verschik, 2008). It is fairly complete in its descriptive reach, accommodating pretty much every kind of change that has been attested, but cannot easily be used to account for these changes, in the sense of predicting what kinds of changes will occur given particular linguistic and social characteristics of a contact situation. The second model with wide reach is Heine & Kuteva’s (2005) framework of contact-induced grammaticalization. The descriptive reach is slightly more modest, as the authors concentrate on providing a fuller theoretical account of a type of change which they argue is by far the most common type of contact-induced change. In this sub-type a figurative or grammatical use of an element in the model language is replicated by using its equivalent in the replica language in that same figurative or grammatical way. An
example would be the use of a ‘comitative adposition’ (‘with’) as an instrumental marker (so that ‘with’ is used in both ‘come with me’ and in ‘open with this key’). Since the grammatical use of the model element is itself the result of grammaticalization (otherwise it would not be a grammatical marker), the whole process is called contact-induced grammaticalization. Finally, Matras (2009) provides an account that does not have a name, but still serves as a stand-alone model of contact-induced change. In a way, it goes back to Weinreich (1953) and Weinreich, Labov & Herzog, (1968) more than the other models in emphasizing the importance of a translation mechanism in bringing about contact-induced change. Contact-induced grammaticalization is an example of such translation; crucially, for Matras, there is a pivot element involved on which the whole change turns. In the example mentioned above in connection with contact-induced grammaticalization, ‘with’ serves as the pivot, as speakers of the borrowing language notice that the equivalent of ‘with’ in the other language is used in a lexical or grammatical environment it is not used in their own language. They then apply that same usage in their own language.

What all these accounts do is explain how a change came into being at its inception. What they do not do is construct a theory that explains what happens between the time that the change gets its start and the time when it is completed. The dominant preoccupation of contact linguistics is the detailed typological comparison of the languages involved to see whether there really is something in the model language and something in the replica language that allows making the latter start behaving like the former, and that allows particular features of the model construction to make the jump to the replica language. That means contact linguistics is focused on the innovation, the first stage of any change.

But there is more to change than just the innovation, and the current article aims to redress the balance a little. The changes we will focus on occur in Immigrant Turkish, the variety of Turkish spoken by immigrants and their offspring in Western Europe, specifically the Netherlands in our case, and they have been the focus of investigation in the abovementioned frameworks (see Backus, 2013, for an overview). However, in the present study we ask a different question than we and others have asked in previous work. We are not primarily interested now in whether or not the changes can be attributed to interference from Dutch, but in the degree to which the changes can be seen as established in the immigrant variety. If change is conceptualized as involving a stage of innovation and a stage of propagation (Croft, 2000), the current study is interested in propagation.

Croft (2000) presents a theory of contact-induced change that is slightly different from the studies mentioned above. The reason is probably that the author does not have a background in contact or historical linguistics but in usage-based linguistics. Contrary to formal syntactic approaches, the usage-based model of language is interested in language change because its foundational assumptions force the
hypothesis that change is a design feature of language (Backus, 2013). From the perspectives of historical and contact linguistics, change is simply a matter of diachronic comparison in the traditional sense: comparison between stages of a language. In a usage-based account, however, diachrony is of much more immediate concern: if linguistic competence is usage-based, it must be forever in motion. In Croft (2000), this insight is used as the point of departure for a usage-based theory of change. It has not been picked up widely yet in contact linguistics (Backus, 2013), but we will argue that a usage-based account can help bridge the gap between historical and contact linguistics, between the study of innovations as they occur and of the state in which a language ends up after any number of years or centuries of contact with another language that has been influencing it.

The most basic distinction that Croft (2000) makes is that between innovation and propagation. Both are based on what people do in ordinary everyday language use: they select elements. Elements can be words, fixed expressions/collocations, syntactic templates, pronunciation features, discourse patterns etc., and importantly they can be either new to the language or old. Of course, the vast majority of selected elements will already be established in the inventory of forms that make up the language in question. But, on the other hand, any loanword, any loan translation, and any borrowed structural pattern, must have been introduced into the replica language at some point. This point forms the innovation stage of a change, and it is based on the selection of a new variant, which Croft refers to as ‘altered replication’. From here on, speakers can keep selecting the new variant or refer to an older equivalent, in the case of loanwords the choice between using the foreign word and its native equivalent. The more the newer variant is selected, the more it is being propagated. The more propagation, the more advanced the change is. At this point, we should point out that there are two ways of measuring the progress of a change. In an individual speaker, the new word or structure may be more or less established. Likewise, the new element will have penetrated the speech community to a larger or smaller degree. We will refer to these two ways as different measures of the progress of change: the degree of entrenchment measures the degree to which a change has progressed in the competence of an individual speaker, and the degree of conventionalization describes the degree to which the change has reached everybody in the community. One of the paradoxes of modern contact linguistics is that we are mostly interested in the latter measurement but are virtually lacking any data that can tell us anything about it.

Studying on-going contact-induced change provides a great opportunity for understanding how historical changes must have unfolded. In this contribution, we will investigate to what degree particular types of Dutch influence on Immigrant Turkish are entrenched in the competence of individual speakers and the degree to which this is shared across speakers. This will go some way to alleviating the danger that we attribute particular cases of grammatical interference we see in corpora the
status of completed change when it is maybe only typical for one or a few speakers
that happened to be participants for the corpus study. It provides a way to assess
degree of propagation.

A final point we wish to make about propagation is about its theoretical
importance. It depends on the theoretical model of competence one espouses
whether knowing about the degree of propagation is relevant. Generative models
essentially just need to know whether something occurs or not, but for usage-based
accounts, data on propagation are crucial. Many earlier accounts of codeswitching
and contact-induced change (e.g., MacSwan, 2000) worked with (absolute)
constraints as the organizing principle: statements about what could not occur (or at
least was judged to be ungrammatical). Finding counterexamples in attested
language use was the main method of investigating these constraints. Usage-based
models go further than that, and share with variationist accounts that they are
interested in patterns and probabilities. Most psycholinguistic accounts on
bilingualism and code-switching could also be argued to share this perspective, e.g.,
Kootstra, Van Hell & Dijkstra, 2009, 2010). It is not just important that something
occurs, it is also important to know how often it does. Variationist studies basically
do this by counting occurrences in large corpora and linking these figures to
background characteristics of the speakers who produced them. For these numbers
to mean anything, large corpora are needed, and while mainstream sociolinguistics
has been able to build such corpora for monolingual language use, these resources
are not so easy to build for contact linguistics (though see Poplack, Zentz & Dion,
2011). A corpus of bilingual speech involving an immigrant minority language such
as Dutch Turkish will be of much less general use than a national corpus of, say,
everyday spoken colloquial Dutch, so it is not realistic to expect contact corpora of
similar size as to ever see the light of day. However, a usage-based account does
require data on entrenchment, as it shares with variationist sociolinguistics that it
aims to know how often a particular feature occurs, not just that it can occur. Section
2 will detail how we have attempted to solve this methodological problem. First,
however, we provide a short overview of earlier work on Dutch Turkish.

**Earlier work on Dutch Turkish**

Not surprisingly given the above, work on Dutch Turkish and the other immigrant
varieties in Western Europe has largely been based on corpus data. A number of
researchers have studied the fate of Turkish as an immigrant language, including
many with a linguistic focus; cf. Backus (2013) for an overview. In addition to
studies of language maintenance and shift (e.g. Extra & Yagmur, 2010), language
choice (Eversteijn, 2010), and language acquisition (Boeschoten, 1990; Schaufeli,
1991; Verhoeven & Boeschoten, 1986), there have been quite a few studies on
codeswitching, (Backus, 2003, 2004) and contact-induced structural change (Backus
This body of work has mostly shown that the immigrant community maintains Turkish to a surprising degree and that speakers tend to mix the languages quite intensely in everyday in-group conversation (Backus, 2013, 2014). Attested codeswitching patterns are very complex, going into both directions and comprising various types of inserted material (both from Dutch into Turkish and vice versa) as well as intense back-and-forth switching between the languages. At times it is not clear as to which language is the main one being spoken. Relatively little is known, however, about the extent to which different kinds of mixing are typical of particular kinds of speakers, and how sensitive the type of mixing is to characteristics of the communicative setting. Evidence from a similar situation in the German city of Mannheim, however, suggests that subgroups within the community differ considerably in how they talk, especially in the degree to which they mix their languages and the way in which they do so (Keim, 2003, 2007, 2008).

A few studies have focused on structural aspects of Dutch Turkish. Bilingual speech obviously contains portions that are more or less in Turkish, in any case featuring utterances in which Turkish is the base or matrix language. In addition, it is relatively easy to elicit monolingual Turkish speech from speakers because this is a register they often need to fall back on, for example when talking to relatives in Turkey. Doğruöz (2007) gives the most systematic overview of structural contact effects in this minority language (also see Backus, Doğruöz & Heine, 2011; Doğruöz & Backus, 2009; Doğruöz & Gries, 2012). It was found that there are many cases of unconventional use of functional elements, such as function words and grammatical markers, and many cases of unconventional lexical combinations (many of them loan translations from Dutch), but relatively few cases of ungrammatical syntax. In addition, the cases of unconventional structure generally co-occurred with many instances of conventional usage of the same structure in the speech of the same speaker, suggesting that the data at most represent incipient changes, which may or may not propagate further.

Somewhat more systematic change was found in a few more recent studies, especially in Onar Valk and Backus (2012), who studied subordinate clauses in the speech of second generation immigrants and compared them to the speech of monolinguals in Turkey. The control group was matched as much as possible to the immigrant participants in terms of socio-economic background. This study used a combination of methods, including the analysis of conversational recordings, responses to a sentence imitation task and responses to a judgment task. The data converged in showing that the bilingual participants used a much higher incidence of finite subordinate clauses than monolinguals, the latter showing the expected preference for non-finite clauses. Similarly, the groups differed in how they positioned the subordinate clause. In the speech of bilinguals, the clause often
followed the matrix verb, while it tended to precede it in the speech of the monolinguals. Interestingly, though, while this converging of the evidence was visible whenever participants had to produce language, in their judgments they showed awareness of the TR-Turkish norms. The conventions of TR-Turkish, i.e. non-finite subordination preceding the matrix verb, was not used much in speech but still recognized as a conventional way of talking.

In our own earlier corpus work, we also found differences within the Turkish community in the Netherlands. Dutch-dominant bilingual speakers (DDB) and Turkish-dominant bilingual speakers (TDB) differed in the degree to which they use unconventional usage patterns (see Chapter 3). The latter group, as is to be expected, showed hardly any unconventional structures. For example, their nominal and verbal inflections are entirely intact, i.e. indistinguishable from those of Turkish monolinguals in Turkey. Dutch-dominant bilinguals, on the other hand, showed some unconventional morphology, for instance in case marking. Once again, though, this went hand in hand with considerably more case marking that was in accordance with the rules of TR-Turkish. Across the board, we seem to find that many changes are in progress, many of them due to Dutch influence, but that few or none of them have gone to completion. They all co-occur with the conventional pattern they may be in the process of replacing, and judgment tasks tend to show a different picture than production data. This makes the degree to which these changes have propagated an interesting topic to investigate. The studies just mentioned have piloted ways of doing this; the current study can be seen as a continuation of that effort.

4.2 The present study

In the context of studies of bilingualism, corpus studies usually entail the analysis of a relatively modest corpus of transcripts of recordings of spontaneous or semi-structured conversations. Usually, little effort has gone into issues such as selecting representative participants and covering as many recurrent conversational settings as possible. Striving towards such goals, common in corpus linguistic research in general, would be unrealistic given the limited time and money available to individual researchers or small teams. This holds for the corpus studies done on Dutch Turkish as well.

In our case, the corpus data consisted of individual or group interviews. Corpus data, however, do not tell us all we want to know. Specifically, they cannot tell us much about the degree to which the unconventional expressions have actually become conventional for the Dutch-dominant bilinguals. It is impossible to know whether the findings can be generalized to the wider Dutch Turkish speech community. The motivating idea behind the current study is that experimental studies can be combined with corpus analysis to get closer to solving the
generalizability issue. One of the benefits of an experimental study is that it can easily capture behavior of a bigger participant pool, allowing for more generalization (Altenberg & Vago, 2004; Backus & Mos, 2011; Gullberg, Indefrey & Muysken, 2009; Kootstra, 2012; Schmid, 2004, 2005). For example, our corpus analyses showed that the unconventional Dutch Turkish verb-noun fixed expression/collocation piano oynamak (play piano) occurred three times in the speech of two speakers. In the experimental data we will report on, we obtained responses about such fixed expressions/collocations 280 times by 135 people, as well as on its TR-Turkish conventional incarnation piano çalmak (hit piano; the Dutch verb spelen ‘to play’ combines with the names of musical instruments and is the source of this loan translation).

We designed a sentence rating experiment to find out to what extent unconventional usage is accepted and entrenched in the competence of bilingual speakers in the Netherlands. Three groups of participants (Dutch-dominant Turkish-Dutch bilinguals [DDB], Turkish-dominant Turkish-Dutch bilinguals [TDB], and Turkish native speakers [TN]) judged a series of conventional and unconventional sentences, some of which were taken from our corpus of spontaneous speech and some of which were created by ourselves, resembling the corpus-derived sentences. The unconventionalities in the sentences covered multiple linguistic constructions that have previously been shown to sometimes be sensitive to Dutch influence (e.g., omission of a specific case marker, unconventional subject-verb agreement, etc.). This was done to create a representative sample of different linguistic constructions, but also gave us the opportunity to investigate whether some unconventional constructions are more strongly accepted than others. The participants had to state whether or not they liked these sentences6 (on a scale from one to ten) and they were also asked to improve the sentences in case they felt the need to improve them. If both rating and improvement tendencies show signs of acceptance of unconventional sentences, then this would be strong evidence of entrenchment and conventionalization of such sentences. That is, if an unconventional sentence receives high ratings and is not systematically improved according to TR-Turkish norms, then this would signify that this unconventional sentence is considered ‘normal’ by the participants and can therefore be seen as entrenched and conventionalized.

6 We do not use the terms “grammaticality or acceptability” ratings but “likeability rating” because participants judged and rated the sentences according to their likability. That is, they were asked to say whether they liked the sentences or not. They did not have to say whether the sentence was right or wrong. The likability of a particular sentence may give us more information about entrenchment of new language forms than acceptability because liking something is not directly associated with correctness, and therefore may reduce the degree of meta-linguistic awareness.
The data from this task should allow us to answer our main research question: To what extent are attested sentences that are unconventional from the perspective of TR-Turkish accepted as conventional by bilingual Turkish speakers in the Netherlands and monolingual Turkish speakers in Turkey?

Sub-questions include:

- Do the different groups (DDB, TDB and TN) differ in their likeability scores and improvement tendencies?
- Do the ratings and improvement tendencies differ for different grammatical constructions?
- Are the effects the same for unconventional sentences attested in a corpus of bilingual speech and for sentences we created on the basis of such attested sentences?

The final sub-question was added because propagation of linguistic change involves two developments: propagation across participants and propagation across linguistic items. By including not only attested sentences but also self-created sentences that involve the same putative change, we can investigate whether unconventionalities are specific to particular linguistic items or whether they generalize across different linguistic items.

If the unconventional forms of Turkish are indeed entrenched and conventionalized in bilinguals in the Netherlands, then we expect bilingual speakers, and especially the Dutch-dominant bilinguals (based on their experience with NL-Turkish), to first of all rate unconventional stimuli as relatively conventional, while the Turkish monolinguals would reject them more forcefully. Secondly, we would then expect the bilingual speakers (and again especially the Dutch-dominant bilinguals) to have a weaker tendency to improve unconventional sentences, and perhaps even have a tendency to improve sentences that were actually conventional for TR-Turkish. If the unconventional forms of Turkish are not entrenched or conventionalized in bilinguals in the Netherlands, then we would expect no differences between the different participant groups in their likeability ratings and improvement tendencies. We did not have a specific hypothesis concerning the different linguistic constructions that we included. Still, we expected that specific unconventional fixed expressions/collocations to show signs of advanced conventionalization.

If the experimental results confirm the picture sketched so far on the basis of corpus data, this will be considered as more robust evidence for the relative acceptance of innovative forms in NL-Turkish, as these forms will then be shown to be relatively entrenched for speakers in the immigrant community. It could then be concluded that a new variety is emerging.
Method

Participants

The task was conducted with 135 participants, of which we include the results of 95 participants\(^7\). Before carrying out the experiment, participants filled out a background questionnaire that included questions about their language attitudes, their country of longest residence, their age of arrival in the Netherlands, etc.

The participants were divided into three groups: Turkish Natives (N = 32), Dutch Dominant Bilinguals (N = 31), and Turkish Dominant Bilinguals (N = 32). All Turkish Natives (TN) lived in Turkey; the other two groups resided in the Netherlands, but differed in when they had arrived there. Bilingual participants who were born in the Netherlands or moved there before they were six were classified as ‘Dutch dominant speakers’; bilingual participants who were at least fourteen years old when they immigrated to the Netherlands were classified as ‘Turkish dominant speakers’. Though the names by which we refer to the groups make reference to the concept of language dominance, we should note that we did not actually test their proficiency. In general, though, there seems to be a good correlation between dominance and the time at which a person has become bilingual (e.g., Birdsong, 2006; Hernandez, Li & MacWhinney, 2005; Kerswill, 1996; Kirkham & Moore, 2013; Labov, 2001).

The Turkish dominant bilingual group consisted of 8 women and 24 men. Their mean age was 45 years (SD = 7.47; Range = 26-60 years old). They had all arrived in the Netherlands after the age of 14. All participants were residents of Amsterdam at the time of the experiment. The length of exposure to Dutch ranged from 14 to 37 years. The second group, Dutch dominant bilingual speakers, consisted of 11 women and 20 men, with a mean age of 24 years (SD = 6.00; Range = 14-38 years old). Two of the participants had arrived in the Netherlands after the age of three, two of them were one year old when they arrived, and two more were less than one year old when they arrived. The rest of the participants in this group were born and raised in Amsterdam. At the time of the experiment, all participants were residents of the Netherlands. Finally, the Turkish native speakers were 6 women and 26 men, with a mean age of 29 (SD= 9.92, Range = 15-51 years old). At the time of the experiment, 40 participants were excluded because they did not fit the criteria for inclusion in one of the three groups (e.g. because they spent the first six years of their lives in Germany, because they were between 6 and 14 years old when they arrived in Holland, because they had arrived in the Netherlands after the age of 14 but had more or less stopped speaking Turkish, or because they were born in the Netherlands but had gone to Turkey between the ages of 7 and 18 for school). It was not useful to have them as a separate group because they did not form a homogeneous group, and it would be too small to run statistical analyses on anyway. However, their data are obviously valuable and will be analyzed on a separate occasion. These decisions should be taken into account when we interpret the results, as they limit generalizability. We will return to this issue in the concluding section.

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Antalya was the place of residence for all participants. Most of them were born and raised there.

**Stimulus items**

This study is the follow-up to the earlier study in which we analyzed a corpus of spoken Dutch Turkish (Chapter 3). In the speech of 26 Turkish bilingual speakers, taken from one-on-one interviews and group conversations, we found many cases of unconventional language use. We chose 15 unconventional sentences from the corpus data for further investigation. These sentences contained unconventionalities that were attested for more than one speaker in the corpus and were therefore hypothesized not to be incidental occurrences but reflections of ongoing change. As an extra check, we submitted these sentences to a panel of thirteen TR-Turkish speakers, who confirmed their unconventionality. These corpus-derived sentences were used as sources for our stimulus items.

The 15 corpus-derived unconventional sentences were taken from the speech of different speakers in the corpus. Nine sentences had been produced by Dutch-dominant bilingual speakers and six by Turkish-dominant bilingual speakers. We then created the conventional counterparts of these sentences (i.e., the same sentence without any unconventionality). The conventional versions of these sentences were kept as similar as possible. This was not entirely possible, though: in the case of loan translations we could not create an acceptable conventional version without changing the content words. Sometimes it was even hard to think of a possible TR-Turkish equivalent. For example, there is no Turkish counterpart of the Dutch concept *huisarts* ‘general practitioner’ (literally ‘house doctor’). Dutch Turkish speakers have translated this term literally, and talk about an *ev dokturu* ‘general practitioner’, preserving the Dutch-inspired combination of ‘house’ and ‘doctor’. In TR-Turkish, this term does not exist.

The sentences were embedded in a reported speech context, in which the subject was indicated by a person’s name. The sentence also contained a tense-marked verb of saying. We did this for various reasons: to avoid overt focus on the critical part of the sentence, to make it harder for the participant to guess the real purpose of the experiment, to have the critical part of the stimulus item appear in the middle of the sentence rather than at the beginning or the end, and to make the sentences more natural. Below is an example of a corpus-derived unconventional sentence (Example 1a), its conventional counterpart (Example 1b), and their incarnations as contextually embedded experimental sentences (Examples 2a and 2b). The unconventionality in this case resides in the choice of verb (‘speak’ instead of ‘construct’). Whether or not this is due to influence from Dutch is hard to say.
ENTRENCHMENT OF INNOVATIVE LANGUAGE USAGE IN DUTCH-TURKISH BILINGUALS

NL-Turkish unconventional sentence from the corpus (produced by Hasan, a DDB speaker): (1a)

\[
\text{Onlar cümlé-yi daha güzel konuș-uyor-lar.}
\]

They sentence-ACC much better speak-PROG.3pl

‘They speak much better sentences.’

TR-Turkish conventional counterpart: (1b)

\[
\text{Onlar cümlé-yi daha güzel kuruyor-lar}
\]

They sentence-ACC much better build-PROG.3pl

‘They build/construct much better sentences.’

The unconventional experimental sentence: (2a)

\[
\text{Hakan bugün bana Onlar cümlé-yi daha güzel konuș-uyor-lar dedi}
\]

Hakan today I-DAT They sentence-ACC much better speak-PROG.3pl say-PASS.1sg

Today Hakan said to me ‘They speak much better sentences.’

The conventional experimental sentence: (2b)

\[
\text{Hakan bugün bana Onlar cümlé-yi daha güzel kuruyor-lar dedi}
\]

Hakan today I-DAT They sentence-ACC much better build-PROG.3pl say-PASS.1sg

Today Hakan said to me ‘They build/construct much better sentences.’

The experimental sentences covered five different linguistic constructions that have previously been shown to sometimes be sensitive to Dutch influence; accusative (1 unconventional; 1 conventional), genitive (5 unconventional; 5 conventional), dative (1 unconventional; 1 conventional), non-case nominal suffixes (2 unconventional; 2 conventional), and lexical fixed expressions/collocations (6 unconventional; 6 conventional). Examples of the experimental sentences and conditions are given in Table 1.
Table 1: Examples of the corpus-derived sentences in 5 conditions, as used in the rating task

<table>
<thead>
<tr>
<th>Source</th>
<th>Conventionality</th>
<th>Stimulus sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accusative</td>
<td>Unconventional</td>
<td>Şimdi o programlar yapabilirsin.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>You can make these programs now.</td>
</tr>
<tr>
<td></td>
<td>Conventional</td>
<td>Şimdi o programları yapabilirsin.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>You can make these programs now.</td>
</tr>
<tr>
<td>Dative</td>
<td>Unconventional</td>
<td>Bazı kelime-ler-e akli-m-a geliyor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some word-PL-DAT mind-NEG.1SG.PRES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I cannot find some words.</td>
</tr>
<tr>
<td></td>
<td>Conventional</td>
<td>Bazı kelime-ler akli-m-a geliyor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Some word-PL mind-NEG.1SG.PRES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I cannot find some words.</td>
</tr>
<tr>
<td>Genitive</td>
<td>Unconventional</td>
<td>Onlara devlet bakması gerekıyor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>They-government-PL.DAT need.1SG.PRESS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The government has to look after them.</td>
</tr>
<tr>
<td></td>
<td>Conventional</td>
<td>Onlara devlet-in bakması gerekıyor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>They-government-PL.DAT need.1SG.PRESS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The government has to look after them.</td>
</tr>
<tr>
<td><em>Coll./Fixed Exp.</em></td>
<td>Unconventional</td>
<td>Bu sabah saat 8 de otobüs-ü aldım.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This morning hour 8-LOC bus-ACC take-PASS.1SG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I take the bus at 8 o’clock this morning.</td>
</tr>
<tr>
<td></td>
<td>Conventional</td>
<td>Bu sabah saat 8 de otobüs-e bindim.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This morning hour 8-LOC bus-DAT get-PASS.1SG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I take the bus at 8 o’clock this morning.</td>
</tr>
<tr>
<td>*Suffixes</td>
<td>Unconventional</td>
<td>Burda çok Türkçe arkadaş-im var.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Here many Turkish friend-POSS.1SG is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I have many Turkish friends here.</td>
</tr>
<tr>
<td></td>
<td>Conventional</td>
<td>Burda çok Türk arkadaş-im var.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Here many Turkish friend-POSS.1SG is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I have many Turkish friends here.</td>
</tr>
</tbody>
</table>

Note: Unconventionalities are highlighted in bold face. Of course, in the original sentences that the participants received, no attention was drawn to them.

*Coll./Fixed Exp. = Collocation/Fixed Expressions, *Suffixes = other than tested suffixes: e.g., -çe, -lı.
In addition to the 30 corpus-derived sentences (15 unconventional and 15 conventional), we included 40 more experimental sentences, which were not corpus-derived but created by us (20 conventional; 20 unconventional). These sentences displayed the same types of unconventionality as the corpus-derived sentences. We were interested in finding out whether ratings for the unconventionalities actually observed in the corpus were paralleled by the ratings for novel sentences with the same structural feature. A few of the created sentences were based on casual observation by the first author of speech within the NL-Turkish community. The created sentences covered eight linguistic constructions; in addition to the accusative (6 unconventional; 6 conventional), dative (2 unconventional; 2 conventional), lexical fixed expressions/collocations (2 unconventional; 2 conventional), genitive (1 unconventional; 1 conventional), and adverbial derivational suffix (1 unconventional; 1 conventional), they also included locative (3 unconventional; 3 conventional), plural (2 unconventional; 2 conventional) and subject-verb agreement (3 unconventional; 3 conventional). The reason for adding more categories was that it allowed us to get some indication of overall variability in the acceptance of innovative features beyond the features we focused on more systematically.

We also included 14 filler sentences, which were of similar length as the critical sentences and were always conventional in Turkish. This was done to make sure that there were slightly more conventional than unconventional sentences in the materials, and thus to make the participants less aware of the fact that 41% of the experimental stimuli were unconventional.

Altogether, the stimulus materials comprised a total of 86 sentences (50 conventional and 36 unconventional ones). These were randomized into five versions. Each participant was presented with one of these versions.

Procedure

Participants were tested individually. The experiment was done with pencil and paper. In the first phase of the experiment, participants were asked to rate each sentence on an absolute scale ranging from 1 (I do not like it at all) to 10 (I really like it). In the introduction, the participants were told that the sentences were generated by a computer program designed to help people learn Turkish. In doing so we wanted to create the impression that the participants were helping us to improve this program before it would be posted on the internet. Instructions were given in Turkish, and Turkish was used during the entire session except that some of the Dutch-dominant bilingual speakers needed some extra explanation in Dutch. Although we tried to use high frequency vocabulary in our stimulus items, some of the words were not familiar to Dutch-dominant bilingual speakers (e.g. some of them did not recognize some words of Arabic origin such as izah etmek ‘to explain’). In such cases, participants were told what the word meant, either through
a Turkish synonym (in the case of *izah etmek* this would be *açıklamak* or a Dutch translation (*uitleggen*, in this case). During the sessions, the experimenter sat next to the participants and pretended to be reading a book, but was ready to help whenever needed. After having finished the rating task, the participants started the second phase of the experiment, which was an improvement task. The participants were given the same sentences that they had just rated and were told to indicate whether they would feel the need to improve sentences they had just rated, and if so, how. The sentences contained a blank space in which they could fill in their improvements, see examples 3a and 3b. Participants were not allowed to change their first rating score: we had told them that we were mainly interested in their first intuitions. The improvement task was done to investigate whether there would be a correlation between their ratings and their decision to improve the sentences or not.

Example (3a)
The same sentence as used in Experiment 1 with blank space.
The unconventional experimental sentence:


*Hakan bugün bana, “……………………………………………” dedi.*

Today Hakan said to me “They speak much better sentences.”

Today Hakan said to me “……………………………………………”

Example (3b)
The conventional experimental sentence:


*Hakan bugün bana, “……………………………………………” dedi.*

Today Hakan said to me “They construct much better sentences.”

Today Hakan said to me “……………………………………………”

**Scoring and analysis**

We submitted the mean likeability scores per participant for the experimental sentences and the mean improvement tendency per participant to analyses of variance, which were performed separately for the corpus-derived sentences and for the created sentences. Three independent variables were included, namely the conventionality of the sentences, the focal morphosyntactic construction, and participant group (Dutch-dominant bilinguals, Turkish-dominant bilinguals, and Turkish natives). We tested for both main effects and interactions between these independent variables.
4.3. Results

The first subsection will provide the results of the rating experiment. The improvement experiment is discussed in Section Results rating experiment. In each subsection, we first discuss the results for the sentences that were taken from the corpus, followed by those for the constructed sentences.

Results rating experiment: Corpus-derived sentences

We obtained a total of 8165 responses from the 95 participants that we included in the analyses (see the participants section for more information on excluded participants). We had to discard 280 responses because of problems with one particular stimulus item: there was a typing error in this sentence in one of the five versions of the experimental material. Most of the participants rated this sentence as unconventional for that reason, and improved it because of this. Obviously, this was not the kind of unconventionality detection we were after. The final data set consisted of 7885 rating responses. Of these, 2850 were responses to the 30 stimulus items that consisted of attested sentences from the corpus and 3800 were responses to the experimental sentences we had created. The other 1235 responses involved filler items, which will not be part of the statistical analyses. Table 2 provides the descriptive statistics of the participants’ likability ratings to the corpus-derived sentences.

**Table 2**: Mean rating scores of likeability per participant group, and per linguistic construction, for the corpus-derived sentences.

<table>
<thead>
<tr>
<th></th>
<th>Dutch Dominant Bilinguals</th>
<th>Turkish Dominant Bilinguals</th>
<th>Turkish Native Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accusative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>7.03</td>
<td>2.75</td>
<td>3.00</td>
</tr>
<tr>
<td>SD</td>
<td>3.00</td>
<td>1.91</td>
<td>2.50</td>
</tr>
<tr>
<td>*Collocation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>7.45</td>
<td>1.46</td>
<td>6.13</td>
</tr>
<tr>
<td>Genitive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>7.88</td>
<td>1.37</td>
<td>4.43</td>
</tr>
<tr>
<td>Nominitative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>6.97</td>
<td>2.76</td>
<td>3.43</td>
</tr>
<tr>
<td>*Suffixes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>8.47</td>
<td>2.11</td>
<td>3.90</td>
</tr>
</tbody>
</table>

Note: Likeability ratings ranged from 1 (don’t like it at all) to 10 (like it completely).

*Conv. = Conventional, *Unconv. = Unconventional
*Collocation = Fixed Expressions, *Suffixes = other than tested suffixes: e.g., -çe, -li.
We performed a 2 (conventionality of sentence) x 5 (linguistic construction) x 3 (participant group) repeated measures ANOVA on the participants’ sentence ratings. First of all, we found a significant main effect of conventionality ($F(1, 92) = 491.901, p < .001$), indicating that, in general, conventional sentences were given higher ratings than unconventional sentences. However, this effect was not the same across the groups, as indicated by a significant two-way interaction of conventionality by participant group ($F(2, 92) = 7.942, p = .001$). As illustrated in Figure 1, the Turkish-dominant bilinguals were relatively strict in their ratings, whereas the Dutch-dominant bilinguals were more tolerant. Interestingly, the scores of the Turkish monolinguals lie in between those of the Dutch-dominant bilinguals and the Turkish-dominant bilinguals, especially with respect to the conventional sentences. Unconventional sentences yielded, even more surprisingly, no difference between Dutch-dominant bilinguals, the group that ostensibly uses these expressions, and Turkish monolinguals, who supposedly never use them.

![Participant Groups](image_url)

**Figure 1:** Graphical illustration of the two-way interaction between conventionality of the corpus-derived sentences and the rating scores of the three participant groups.
In addition, the effect of conventionality was significantly different for the different linguistic constructions ($F(4, 368) = 14.399$, $p < .001$), and this effect was, in turn, marginally significant for the three participant groups ($F(8, 368) = 1.941$, $p = .053$). Figures 2, 3, and 4 illustrate this, and show that especially Dutch-dominant bilinguals were tolerant in their ratings for unconventional constructions in the category of fixed expressions/collocations. As Figure 2 shows, the Dutch-dominant bilinguals gave mean ratings of above 5 (mean = 6.5) for unconventional fixed expressions/collocations, in contrast to the other two groups, who gave lower ratings to unconventional fixed expressions/collocations (see Figures 3 and 4, respectively). In the other constructions, the Dutch-dominant bilinguals make a clearer difference between the conventional and unconventional variants. The effect of fixed expressions/collocations is confirmed in a test of within-subject contrasts of the three-way interaction (with the contrast of construction based on deviation coding), in which the contrast of fixed expressions/collocations constituted the only significant contrast ($F(2, 92) = 4.088$, $p = .020$). The fact that the differences in ratings between conventional and unconventional constructions were smaller for fixed expressions/collocations suggests that it is easier for these expressions to change than for the morphosyntactic constructions covered by the other four categories.

One other aspect that can be seen in the figures below is that the Turkish monolinguals gave relatively low ratings to conventional accusative constructions. This was also reflected in the test of within-subject contrasts of the three-way interaction, in which the contrast of accusative constructions yielded a marginally significant contrast ($F(2, 92) = 2.889$, $p = .061$).
Figure 2: Graphical illustration of the three-way interaction between conventionality, and linguistic construction in DDB participants.

Figure 3: Graphical illustration of the three-way interaction between conventionality and linguistic construction in TDB participants.
All in all, there were several differences between the three speaker groups. Two findings stand out. First, the differences between the ratings for conventional and unconventional sentences were smaller for DDB than for TN and TDB. Dutch-dominant bilingual speakers were especially tolerant of unconventional fixed expressions/collocations, giving them scores that were very close to those they gave for their conventional counterparts. The second notable finding was that TDB speakers seem to be more conservative than TN speakers, as they are more severe in their disapproval of unconventional sentences. This suggests they assume the role of gatekeepers, who guard Turkish against foreign influence (e.g. Kerswill, 1996; Sakel, 2012a, 2012b; Trudell, 2012).

**Rating experiment: created sentences**

As stated previously, the data set for the created sentences consists of 3800 responses from 95 participants. The descriptive statistics for their likability ratings are given in Table 3.
Table 3: Mean rating scores of likeability per participant group, and per linguistic construction, for the created sentences.

<table>
<thead>
<tr>
<th></th>
<th>Dutch Dominant Bilinguals</th>
<th>Turkish Dominant Bilinguals</th>
<th>Turkish Native Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>*Conv.</td>
<td>8.29</td>
<td>1.33</td>
<td>3.27</td>
</tr>
<tr>
<td>*Unconv.</td>
<td>8.40</td>
<td>1.49</td>
<td>2.73</td>
</tr>
<tr>
<td>Conv.</td>
<td>7.42</td>
<td>2.01</td>
<td>5.38</td>
</tr>
<tr>
<td>Unconv.</td>
<td>8.80</td>
<td>1.77</td>
<td>4.13</td>
</tr>
<tr>
<td>*Collocation</td>
<td>7.94</td>
<td>1.63</td>
<td>4.67</td>
</tr>
<tr>
<td>*S-v agr.</td>
<td>8.62</td>
<td>1.42</td>
<td>3.43</td>
</tr>
<tr>
<td>*Suffixes</td>
<td>7.75</td>
<td>1.63</td>
<td>2.81</td>
</tr>
<tr>
<td>plural</td>
<td>8.37</td>
<td>2.17</td>
<td>3.30</td>
</tr>
</tbody>
</table>

Note: Likeability ratings ranged from 1 (do not like it at all) to 10 (completely like it).
*Conv. = Conventional, *Unconv. = Unconventional
*Collocation = Fixed Expressions, *S-v agr. = Subject-verb agreement, *Suffixes = other than tested suffixes: e.g. -çe, -li.

We performed a 2 (conventionality of sentence) x 8 (linguistic construction) x 3 (participant group) repeated measures ANOVA on the sentence ratings. The findings closely mirror what we found for the corpus-derived stimulus items. First of all, we found a significant main effect of conventionality ($F(1, 92) = 1066.286, p < .001$), indicating that, in general, conventional sentences were given higher ratings than the ones containing an unconventional feature. Also, we found a significant two-way interaction of conventionality by participant group ($F(2, 92) = 8.503, p < .001$). This effect was similar to the interaction effect we found for the corpus-derived sentences, and is illustrated in Figure 5. The Turkish-dominant bilinguals were again relatively strict in their ratings (they gave relatively high scores for conventional sentences, and relatively low scores for unconventional ones), whereas the Dutch-dominant bilinguals were more tolerant in their ratings. The monolinguals again fall in between the two bilingual groups in their ratings for unconventional sentences.
In addition, we found a significant interaction effect of construction by conventionality ($F(7, 644) = 17.637, \ p < .001$), indicating that the effect of conventionality was not the same across the different constructions. Additionally, this effect was different for the different participant groups, as reflected in a three-way interaction between construction, conventionality, and participant group ($F(7, 644) = 5.107, \ p < .001$). This three-way interaction is depicted in Figures 6, 7, and 8. It becomes clear from these figures that, in general, ratings for unconventional locative constructions are always relatively tolerant compared to the other seven types (as confirmed by a significant within-subjects contrast effect of this construction, $F(1, 92) = 63.558, \ p < .001$), and that ratings for the unconventional fixed expressions/collocations are relatively high in the Dutch-dominant bilinguals (as confirmed by a significant within-subjects contrast effect of this construction in the three-way interaction, $F(2, 92) = 21.987, \ p < .001$). In addition to the effect of fixed expressions/collocations in the three-way interaction (which is similar to the situation with the corpus-derived sentences), it is evident from Figures 6, 7, and 8 that the Dutch dominant bilinguals show more variation across constructions in their ratings (especially in their ratings of unconventional sentences) than the other two groups (see Figures 6, 7, and 8).
Figure 6: Graphical illustration of the three-way interaction between conventionality and linguistic construction in DDB participants.

Figure 7: Graphical illustration of the three-way interaction between conventionality and linguistic construction in TDB participants.
All in all, the results of the created sentences are very similar to those of the corpus-derived sentences. This suggests that the stimulus items we created were not judged as artificial and closely resembled actually attested sentences. More importantly, it also indicates that the effects of conventionality in the corpus-derived sentences are not due to item-specific features of the included sentences; the results of the created sentences therefore strongly suggest that the observed effects of conventionality are generalizable across different instantiations of the same morphosyntactic construction.

**Improvement experiment: Corpus-derived sentences**

The descriptive statistics on the proportion of corpus-derived sentences that participants decided to improve, broken down for type of construction, are given in Table 4.
We performed a 2 (conventionality of sentence) x 5 (linguistic construction) x 3 (participant group) repeated measures ANOVA on these data. We found the expected main effect of conventionality (\(F(1, 92) = 743.805, p < .001\)), indicating that, in general, unconventional sentences were improved more often than conventional sentences. Improvement tendencies were the same across participant groups, as indicated by a non-significant two-way interaction of improvement by participant group (\(F(2, 92) = 2.189, p = .118\)). There was, however, a significant three-way interaction between conventionality, linguistic construction and participant groups \(F(8, 368) = 2.462, p = .013\). This indicates that the participants of different groups behaved differently in terms of their improvements of sentences in different constructions. Figures 9, 10 and 11 illustrate this. What stands out from these figures is that unconventional fixed expressions/collocations are improved less often than the other constructions, and that this is especially the case for the Dutch-dominant bilinguals. Indeed, the Dutch-dominant bilinguals more often chose not to improve the unconventional fixed expressions/collocations than that they chose to improve them (proportion of improvements: .35, see Table 3), and the difference in improvement tendencies between conventional and unconventional fixed expressions/collocations is relatively small for this participant group (proportion of improvements to conventional sentences: .20; proportion of improvements to unconventional sentences: .35, see Table 3). This effect is confirmed by a within-subjects contrast analysis of the three-way interaction, yielding a significant contrast effect for the fixed expressions/collocations (based on deviance coding), \(F(2, 92) = 3.858, p = .025\). Another effect that can be seen from the figures is the relatively high proportion of improvements of conventional accusative constructions by the
Turkish monolinguals. This effect also reached significance in the within-subjects contrast analysis of the three-way interaction, $F(2, 92) = 4.905, p = .009$. This effect can be related to the relatively low ratings that the monolinguals gave to these sentences in the rating task, as was also reflected in the marginally significant effect of the accusative construction in the parallel three-way interaction effect in the rating task (see section 4.1).

Figure 9: Graphical illustration of the three-way interaction between mean proportion improvement and linguistic construction in DDB participants, for the corpus sentences.
Figure 10: Graphical illustration of the three-way interaction between mean proportion improvement and linguistic construction in TDB participants.

Figure 11: Graphical illustration of the three-way interaction between mean proportion improvement and linguistic construction in TN participants.
Entrenchment of innovative language usage in Dutch-Turkish bilinguals

Altogether, the results of the improvement task are roughly consistent with the results on the rating task in the corpus-derived sentences. That is, results on both the rating task and the improvement task suggest that Dutch-dominant bilinguals do not object to unconventional fixed expressions/collocations as much as the Turkish-dominant bilinguals and the Turkish natives do.

Improvement experiment: created sentences

The descriptive statistics for the improvement task with stimulus items that were created by us are given in Table 5.

Table 5: Proportion of sentences improvement per linguistic construction types and per participant groups, for the created sentences.

<table>
<thead>
<tr>
<th>Linguistic Construction</th>
<th>Dutch Dominant Bilinguals</th>
<th>Turkish Dominant Bilinguals</th>
<th>Turkish Native Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accusative</td>
<td>.11</td>
<td>.17</td>
<td>.93</td>
</tr>
<tr>
<td>Dative</td>
<td>.10</td>
<td>.20</td>
<td>.97</td>
</tr>
<tr>
<td>*Collocation</td>
<td>.23</td>
<td>.29</td>
<td>.62</td>
</tr>
<tr>
<td>Genitive</td>
<td>.03</td>
<td>.18</td>
<td>.87</td>
</tr>
<tr>
<td>Locative</td>
<td>.12</td>
<td>.19</td>
<td>.59</td>
</tr>
<tr>
<td>Plural</td>
<td>.03</td>
<td>.18</td>
<td>.93</td>
</tr>
<tr>
<td>*S-v agr.</td>
<td>.23</td>
<td>.26</td>
<td>.98</td>
</tr>
<tr>
<td>*Suffixes</td>
<td>.07</td>
<td>.25</td>
<td>.90</td>
</tr>
</tbody>
</table>

Note: *Conv. = Conventional, *Unconv. = Unconventional
*Collocation = Fixed Expressions, *S-v agr. = Subject-verb agreement, *Suffixes = other than tested suffixes: e.g., -çe, -li.

We performed a 2 (conventionality of sentence) x 8 (linguistic construction) x 3 (participant group) repeated measures ANOVA. Once more, we found a significant main effect of conventionality ($F(1, 92) = 2701.698, p < .001$), indicating that, in general, unconventional sentences were more often improved than conventional sentences. In contrast to the corpus-derived sentences, tendencies were different between the groups, as indicated by a significant two-way interaction of conventionality by participant group ($F(2, 92) = 3.708, p = .028$). As illustrated in Figure 12, this is quite a subtle interaction effect in which especially the Turkish
monolinguals had a relatively strong tendency to correct unconventional sentences, compared to the two groups of bilingual speakers.

![Graphical illustration of the two-way interaction between mean proportion and improvement of created sentences across three participant groups.](image)

**Figure 12:** Graphical illustration of the two-way interaction between mean proportion and improvement of created sentences across three participant groups.

There was also a significant two-way interaction of conventionality by linguistic construction $F(7, 644) = 22.072, p < .001$ and a significant three-way interaction of conventionality, linguistic construction by participant group $F(14, 644) = 4.514, p < .001$. This indicates that the groups behaved differently when they improved sentences in different constructions. This is illustrated in Figures 13, 14 and 15. As was the case for the corpus-derived sentences, the improvement scores are in line with the rating scores, for all three groups. If sentences received a low rating score, they were more likely to be improved. At first glance, when comparing all three graphs at the same time, we note that all three groups were less inclined to improve locative constructions (this was the most significant contributing effect underlying the two-way interaction of conventionality by construction, as found in the within-subjects contrast analysis of this effect, $F(1, 92) = 90.590, p < .001$). This is consistent with the effect of locative constructions in the rating task. Another effect that can be noted from the graphs, and that we should expect by now, is the relatively low tendency of Dutch-dominant bilinguals to improve the unconventional fixed expressions/collocations, compared with the Turkish-dominant bilinguals and
Turkish monolinguals. This effect indeed also reached significance in the within-subjects contrast analysis of the three-way interaction, $F(2, 92) = 14.736, p < .001$). This relatively low tendency of Dutch-dominant bilinguals to improve the unconventional fixed expressions/collocations is consistent with the relatively high ratings given to these sentences by these participants (see Figure 6).

![Graphical illustration of the three-way interaction between conventionality and linguistic construction in DDB participants.](image-url)
Figure 14: Graphical illustration of the three-way interaction between conventionality and linguistic construction in TDB participants.

Figure 15: Graphical illustration of the three-way interaction between conventionality and linguistic construction in TN participants.
What is more, some of the Dutch-dominant bilinguals even disliked the conventional fixed expressions/collocations and improved them into their unconventional counterparts, as with ‘play the piano’ (unconventional, caused by loan translation) versus ‘hit the piano’ (conventional) and ‘take the bus’ (unconventional, again caused by loan translation) versus ‘get on the bus’. This is illustrated in Tables 2 and 4, which show that although there is still a slight preference for the conventional fixed expressions/collocations over the unconventional ones in the Dutch-dominant bilinguals— it is also the case that a number of Dutch-dominant bilinguals in fact prefer the unconventional fixed expression over the conventional one, and this explains why they chose to change them into the unconventional (i.e., Dutch-like) version.

Table 6: Types of responses to fixed expressions by the Dutch-dominant bilinguals.

<table>
<thead>
<tr>
<th>Tested *Fixed exp.</th>
<th>Conventionality</th>
<th>Liked and unimproved</th>
<th>Not liked and improved</th>
</tr>
</thead>
<tbody>
<tr>
<td>otobüs almak</td>
<td>unconventional</td>
<td>21</td>
<td>10</td>
</tr>
<tr>
<td>otobüse binmek</td>
<td>conventional</td>
<td>25</td>
<td>6</td>
</tr>
<tr>
<td>piyano oynamak</td>
<td>unconventional</td>
<td>22</td>
<td>9</td>
</tr>
<tr>
<td>piyano çalmak</td>
<td>conventional</td>
<td>28</td>
<td>3</td>
</tr>
</tbody>
</table>

*Fixed expressions = collocations.

Note: The numbers refer to the number of bilinguals who responded in the indicated way to the tested fixed expressions. Thus, for example, 21 bilinguals liked the fixed expression/collocation otobüs almak and did not improve this collocation. The response category ‘not liked and improved’ refers to the number of bilinguals who either improved an unconventional fixed expression/collocation into the conventional one or a conventional collocation into the unconventional Dutch-like one. *Fixed expressions = collocations.

Altogether, just as in the rating tasks, the results of the created sentences in the improvement task are comparable to those of the corpus-derived sentences. This again suggests that the effects of conventionality in the corpus-derived sentences, and especially the effects of the fixed expressions/collocations, are generalizable to different linguistic items outside the corpus as well.

Summary of results of rating and improvement experiments

The four experiments presented above all yielded important differences between participant groups in likeability ratings and improvement tendencies of conventional and unconventional Turkish sentences. The most important finding was that, in all experiments, Dutch-dominant Turkish-Dutch bilinguals liked unconventional Turkish sentences more than Turkish-dominant bilinguals and Turkish monolinguals, and (thus) also had a lower tendency to improve these sentences. This
was especially the case with fixed expressions/collocations, in which some Dutch-dominant bilinguals even improved conventional sentences into unconventional ones. Importantly, the results were comparable for the corpus-derived and created sentences, and the results on the rating and improvement tasks were compatible with each other.

4.4. Discussion and conclusions

The aim of this study was to examine the extent to which unconventional innovative language usage in Dutch-Turkish bilinguals in the Netherlands is accepted and entrenched in the competence of bilingual speakers in the Netherlands. Using a sentence rating and improvement task, we collected likeability ratings and improvement tendencies of conventional and unconventional Turkish sentences (both corpus-derived and self-created ones) from Dutch-dominant Turkish-Dutch bilinguals, Turkish-dominant Turkish-Dutch bilinguals, and Turkish monolinguals. The unconventionality in the sentences covered multiple linguistic constructions that have previously been shown to sometimes be sensitive to Dutch influence.

We found that the Dutch-dominant bilinguals in general gave higher likeability ratings to unconventional sentences (i.e., Turkish sentences with Dutch-like constructions) relative to the Turkish-dominant bilinguals and the Turkish monolinguals. Consistent with this, the Dutch-dominant bilinguals also had a relatively low tendency to improve these Dutch-like, unconventional sentences. Interestingly, this separate behavior of the Dutch-dominant bilinguals was especially prominent with respect to unconventional fixed expressions/collocations, compared to the other types of constructions, which were all morphosyntactic in nature, such as case markers. There were even some conventional fixed expressions/collocations that were not liked by the Dutch-dominant bilinguals and got changed into their Dutch-like, unconventional counterparts. This happened in particular with loan translations of the Dutch verb-object fixed expressions/collocations ‘play the piano’ and ‘take the train’. These meanings happen to be conveyed through different verb-object combinations in TR-Turkish (with different verbs). Dutch dominant bilinguals seem to have established new conventions, and to be moving away from the TR-Turkish conventions that still apply to Turkish-dominant bilinguals.

The finding that Dutch-dominant bilinguals liked the unconventional sentences more and improved them less than the Turkish-dominant bilinguals and Turkish monolinguals is consistent with our expectations on the basis of our corpus of Dutch-Turkish language use. The combination of higher likeability ratings and lower improvement tendencies indicate that unconventional forms are indeed (in the process of becoming) entrenched and conventionalized in Dutch-dominant bilinguals in the Netherlands. Thus, our experimental data confirm the picture
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sketched so far on the basis of corpus data, and provide more robust evidence for the relative acceptance of innovative forms in NL-Turkish.

Dutch-dominant bilingual speakers gave high rating scores to unconventional forms compared to the other two groups, and of course they are also the group that has the most intensive contact with Dutch. This provides clear evidence that the acceptance and use of unconventional Turkish is related to intensive contact with Dutch. Our results are consistent with the idea of innovative language use as a process of contact-induced language change.

Interestingly, conventional sentences in the ‘accusative’ category received a significantly lower score from Turkish monolinguals. This could indicate a shift in accusative usage in Turkey. TDB speakers are stricter in rating the sentences and give more positive scores. During the improvement task they changed almost every sentence, apparently feeling that they had to improve everything, including word order, and they were less tolerant of unconventional features than the other groups of speakers. We interpreted this as a sign that these speakers act as sociolinguistic gatekeepers. Undergoing some Dutch influence themselves, being confronted with that when interacting with monolinguals, and being exposed daily to the more unconventional Turkish of Dutch-dominant bilinguals, they may well have adopted the stance that they need to stem what they perceive as the demise of the language. Monolinguals feel no uncertainty, but for bilinguals it may well be part of everyday reality, and increased purism is one well-documented response. Finally, it is worth mentioning that these results were found in both the corpus-derived sentences and the created sentences. We will now relate these findings to the research literature and discuss their implications for the usage-based perspective put forward in the introduction.

One of the basic assumptions of the usage-based approach is that usage determines storage. If you use a particular construction often, it will be more entrenched in your mental representation. As for the contact effects examined in this study, this would mean that if Dutch-dominant bilinguals use particular unconventional structures more, these will also be more entrenched, and thus elicit more positive ratings in a judgment task. Dutch-dominant bilingual speakers indeed gave high scores to attested loan translations but also to their conventional counterparts. Interestingly, the Turkish-dominant speakers gave lower scores to unconventional utterances than the monolinguals, suggesting a type of hypercorrection effect. As far as implications for the usage-based approach are concerned, this suggests that judgments do inevitably include an attitudinal component, so that we should not be too confident that judgments directly reflect degrees of entrenchment. On the other hand, if any judgment task was going to yield attitudinal data it was going to be this one, since participants were asked whether they ‘liked’ the stimulus sentences.
In addition to loan translations, we also elicited judgments on many other grammatical constructions that corpus findings had shown to be vulnerable in the immigration context. While in general the same picture holds across the board, with Dutch-dominant bilinguals being more accepting of the contact-induced features, their judgments only differ considerably from the other groups when the stimulus material contains loan translations. In fact, these participants quite often rejected the Turkey-Turkish (TR-Turkish) conventional equivalents, suggesting that these had not just dropped out of use but were not even entrenched anymore in their mental representation. Morphosyntactic constructions with unconventional features, on the other hand, were rated lower than their conventional counterparts by all groups, though the Dutch-dominant bilinguals were relatively tolerant of them. Presumably this reflects their occasional use of these constructions, again suggesting that the tight link between usage and mental storage that underlies the usage-based approach is, at the very least, a promising idea.
Cross-linguistic structural priming as a mechanism of language change: Evidence from Papiamento-Dutch bilinguals in Aruba and the Netherlands*

Chapter 5

Abstract

This paper reports on a multidisciplinary approach to investigate the cognitive mechanisms of contact-induced language change. In two experiments, we investigated whether cross-linguistic structural priming can serve as a cognitive mechanism underlying contact-induced language change. Papiamento speakers from Aruba and from the Netherlands described dative events in an unprimed situation (Experiment 1) and in a situation where they heard a Dutch prime sentence before describing the event (Experiment 2). The speakers from the Netherlands produced more Dutch-like dative structures than the speakers from Aruba (Experiment 1), their syntactic choices were influenced by the Dutch prime sentences (Experiment 2), and Dutch-like dative structures were most prevalent in younger speakers from the Netherlands (both experiments). This combination of results suggests that Papiamento syntactic preferences in the Netherlands are changing as a function of contact with Dutch, and that cross-linguistic structural priming can be seen as a mechanism underlying this change. We discuss how these findings may connect studies on contact-induced language change with studies on bilingual language processing.

Keywords: cross-linguistic priming, structural priming, contact-induced language change, bilingualism, dative, language production, Papiamento.

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5.1. Introduction

The study of language contact is carried out from various perspectives, including the historical linguistic study of contact-induced language change, the sociolinguistic study of social aspects of multilingualism in the speech community, and psycholinguistic studies of the cognitive micro-processes in the mind of multilingual individuals (see e.g., Bhatia & Ritchie, 2013; Hickey, 2010; Muysken, 2013; Romaine, 1989; Thomason, 2001). Many scholars from different linguistic disciplines have studied diverse topics such as cross-language activation in bilingual processing (e.g., Brown, 2007; Brown & Gullberg, 2008, 2011; Doğruöz & Gries, 2012; De Groot, 2011; Dijkstra & Van Heuven, 2002; Kroll, Bobb & Wodniecka, 2006; see Kroll & De Groot, 2005 for overviews), cross-linguistic influence in L2 acquisition (e.g., Morett & MacWhinney, 2013; see Jarvis & Pavlenko, 2007; Odlin, 1989, for overviews), code-switching (e.g., Kootstra, Van Hell & Dijkstra, 2009, 2010, 2012; see Bullock & Toribio, 2009; Gardner-Chloros, 2009, for overviews), and language convergence and contact-induced language change (e.g., Backus & Onar Valk, 2013; Doğruöz & Backus, 2009; Hickey, 2010; Jarvis & Pavlenko, 2007; Pavlenko, 2011; Wodak, Johnstone & Kerswill, 2011). This diversity of perspectives makes the study of multilingualism highly multidisciplinary, but also a bit scattered: the different perspectives on multilingualism research seem to form sub-disciplines with their own research questions, their own coverage of time and space dimensions, their own units of analysis and levels of explanation, and their own theoretical and methodological paradigms (Moyer, 2007; Muysken, 2010, 2013). The amount of cross-talk between disciplines is rather limited. The goal of this study is to bring these multiple perspectives on language contact closer together by studying contact-induced language change by means of psycholinguistic experiments.

The study of contact-induced language change is traditionally the domain of historical linguistics and sociolinguistics. In historical linguistics, the main focus lies on structural change, and methods used are typically structural analysis of languages, language typology or cross-linguistic comparisons (see Kouwenberg & Singler, 2008, for an overview). This is for instance studied by examining pidgins and creoles, which are the result of multiple languages coming together to eventually form one new language (e.g., Arends, Muysken & Smith, 1994), or by studying structural convergence between languages, which manifests itself by one language taking over syntactic patterns from another language (e.g., Matras, 2010). In sociolinguistics, phenomena of language change are typically studied using corpora of natural speech (e.g., Labov, 1994, 2001; Thomason & Kaufman, 1988; Winford, 2003). Sociolinguists aim to elicit ‘natural speech’ in a ‘natural context’. This is typically done by building a corpus of recorded informal free conversation or structured interviews. Sources are mostly individual interviews or small group conversations. Sociolinguistic explanations are often centered on speaker-specific
and speech-community characteristics, such as the speakers’ age, social class, and
gender as potential factors influencing language use and language change (see e.g.,

Based on such corpus-based research, it has for instance been found that
processes of language change are stronger in younger people than in older people
(e.g., Kerswill, 1996; Kirkham & Moore, 2013; Labov, 2001). Kerswill (1996)
concluded on the basis of a literature review that adolescents are the most important
transmitters of language change. This is consistent with Labov (2001), who
describes in his book on principles of language change that peaks of language
change in progress are typically found in younger people (see also Kirkham &
Moore, 2013). Such age effects on language change are often explained in
sociolinguistics as acts of identity, focusing on young people’s desire to belong to
specific groups or to distinguish themselves from a specific group (e.g., Cornips,
2008; Holmes & Meyerhoff, 2003; Kerswill, 1996; Le Page & Tabouret-Keller,
1985; Milroy & Gordon, 2003; Tagliamonte & D’Arcy, 2009). Interestingly, age
effects on language use can also be explained from a psycholinguistic perspective.
That is, it has been found that from early adulthood onwards, people’s
neurocognitive plasticity gradually declines, leading to a decrease of memory and
learning ability with increasing age (see e.g., Birdsong, 2006, for a review). Thus,
languages become more and more cognitively entrenched in older people, which
make older people’s languages less flexible or open to newer forms than younger
people’s languages (e.g., Hernandez, Li & MacWhinney, 2005). Thus, it is clear
from corpus-based research that languages are shaped by the specific speakers who
use the language in a specific social and interactive context. Findings from corpus-
based research often point not only to social but also to cognitive explanations.

A difference between psycholinguistics and other linguistic subdisciplines is that
psycholinguistics is mostly focused on cognitive explanations of language
processing, whereas sociolinguistics and structural linguistics are more concerned
with linguistic forms, patterns or syntactic constructions in specific contexts, without
alluding much to cognitive mechanisms of language use. Because psycholinguistics
is mostly focused on cognitive mechanisms of online (i.e., direct, immediate)
language processing within individual language users, contact-induced language
change (which can be seen as a long-term process that goes beyond single
individuals) as well as social aspects of language use have not been explained and
studied much from a psycholinguistic perspective. In addition, because
psycholinguistics is concerned with the study of cognitive mechanisms of language
processing in single individuals and not so much on social aspects of language use,
psycholinguistic studies are mostly based on relatively short laboratory experiments
outside a social setting. While such experiments do not provide a direct link with
language use in real life discourse situations (which corpus research does; see
Gullberg, Indefrey & Muysken, 2009), they are still very useful to test specific
hypotheses on language use in a very systematic manner with a relatively large sample of participants. Such hypothesis testing is more difficult on the basis of corpus research. That is, although corpus research can provide important insights into social aspects of language use and language change on the basis of a research methodology focused on naturalistic language use, it is impossible to control the many factors that may have influenced linguistic behavior in a corpus (e.g., the setting in which the recordings took place, the topic about which was spoken, etc.). In addition, corpus-based research is often based on only a limited number of speakers. It is therefore difficult to state with certainty to what extent conclusions about speaker-specific factors (like age) are not due to the coincidental selection of the specific speakers. Thus, it can be argued that corpus-based research is more focused on generating hypotheses than on testing hypotheses (see also Kootstra, 2012, for discussion).

For the testing of hypotheses, it is important to conduct experimental research, in which speaker-specific and linguistic factors can be systematically controlled and manipulated, and in which it is typically possible to investigate a relatively large sample of participants. This is exactly the goal of the present study. Our aim is to study relatively short-term mechanisms of bilingual language processing and relate these to the longer-term process of language change. In doing so, we also include the potential influence of sociolinguistic, speaker-specific factors. Before we move on to the details of our study, we now first provide some more background on the potential relation between psycholinguistic processing mechanisms in bilinguals and contact-induced language change.

In psycholinguistics, the cognitive processes and representations underlying language use are often accounted for through models of the cognitive architecture of the process that they intend to explain (see e.g., Brown & Hagoort, 1999, for [monolingual] models on production, comprehension, and reading, among other things). Most models assume that language use (either language production or comprehension) involves the activation and selection of linguistic representations at multiple levels of processing. For example, language production is typically seen as a process consisting of various stages from conceptualization of a message to the actual articulation of the message (e.g., Levelt, 1999; Levelt, Roelofs & Meyer, 1999). That is, based on a specific conceptualization, a speaker is assumed to conceptualize a preverbal message, on the basis of which lexical representations (words) and syntactic representations (sentences) are activated, which then also activate the phonological form of the message, which guides the articulation of the message.

Models of language processing in bilinguals are typically based on the same architecture and mechanisms as monolingual models (e.g., de Bot, 1992, 2004; Hartsuiker & Pickering, 2008; Kootstra, Van Hell & Dijkstra, 2010), but the words and structures can come from different languages. It has been found in many studies
that these different languages influence each other during language processing at different levels of processing, and that it is in fact practically impossible for a bilingual to completely switch off one of his/her languages when using the other language (see e.g., Kroll & De Groot, 2005; Van Hell & Tanner, 2012, for overviews). This cross-language interaction during language use is typically represented in language processing models in the form of parallel activation of linguistic representations from both languages, which are assumed to be stored in one system that is shared for both languages. Parallel activation in a shared system can lead to cross-language associations between linguistic representations in the bilingual mind and to cross-language interactions in linguistic behavior. An important assumption in the present study is that if such cross-language activation during language processing takes place continuously, and bilinguals are not able to completely switch off the non-selected language during language use, then this may in the long run lead to language change (i.e., language change as a function of cross-language interaction, i.e., contact-induced language change; see also Loebell & Bock, 2003).

In our study, we focus on cross-language activation at the syntactic level in sentence production. Syntactic cross-language activation in sentence production has been extensively studied in cross-language structural priming experiments. Cross-linguistic structural priming refers to the process in which syntactic processing in one language is modulated by the syntactic structure of a recently processed sentence in another language (see e.g., Hartsuiker & Pickering, 2008). This is done with, among other things, *dative sentences* in ditransitive events. Several languages have a dative alternation, in which dative events can be expressed with either a double object structure (i.e., subject-verb-indirect object-direct object [*’boy-give-girl-ball’*]; henceforth DO-structure) and a prepositional object structure (subject-verb-direct object-preposition-indirect object [*’boy-give-ball-to-girl’*]; henceforth PO-structure; see e.g., Malchukov, Haspelmath & Comrie, 2010, for more information). In one of the first cross-language structural priming studies, Loebell and Bock (2003) asked German-English bilinguals to reproduce a dative sentence in a specific language with a specific structure (either German or English) and then describe a picture representing a dative event in the other language. Loebell and Bock found that the reproduced dative sentence indeed primed structural choices across languages. Similar findings of structural priming across languages have been found in a large number of other studies with different task varieties and language combinations (e.g., Bernolet, Hartsuiker & Pickering, 2007; Bathtina-Jantsiken, 2013a; Cai, Pickering, Yan & Branigan, 2011; Desmet & Declercq, 2006; Hartsuiker, Pickering & Veltkamp, 2004; Kantola & Van Gompel, 2011; Kootstra & Doedens, revision under review; Meijer & Fox Tree, 2003; Schoonbaert, Hartsuiker & Pickering, 2007; see Hartsuiker & Pickering, 2008; Pickering & Ferreira, 2008, for reviews). These findings indicate that syntactic processing in bilingual language
production is open to effects of cross-language activation. After all, the influence of recent processing of a syntactic structure in one language on syntactic choices in another language can only take place when the processing of syntactic structure in bilingual language production would take place in a shared system that allows for cross-language activation of syntactic structure.

In addition to providing experimental evidence of syntactic cross-language activation, it is important to note that structural priming is also an important mechanism that influences language choices in real life. That is, structural priming has not only been observed in experiments, but also in corpora of natural speech and conversations (e.g., Bresnan, Cueni, Nikitina & Baayen, 2007; Gries, 2005). Based on this, it has been suggested that structural priming facilitates the process of language production (Ferreira & Bock, 2006; Schober, 2006) and may also underlie processes of interactive alignment and interlocutor accommodation in social interactions (i.e., the tendency of interlocutors in dialogue to copy each other’s linguistic behavior; e.g., Pickering & Garrod, 2004). If such priming in natural discourse would take place continuously, then it may lead to language change. Jäger and Rosenbach (2008: 85) illustrate this point by stating that:

[…] what appears as diachronic trajectories of [...] change is decomposable into atomic steps of language use. More generally, we suggest that priming is the ‘missing link’ in evolutionary models of language change in that it provides for a plausible linguistic replicating mechanism, i.e. an ‘amplifier’ of linguistic units.

Similarly, Pickering and Garrod (2004) and Garrod and Pickering (2013) pointed out that interactive alignment in dialogue, which is a short-term effect of linguistic priming, may also lead to routinization of linguistic expressions as a long-term effect. This routinization and development of fixed expressions is based on repeated activation of linguistic representations in dialogues, and can also be related to the potential role of priming as a mechanism of implicit language learning (e.g., Chang, Dell & Bock, 2006).

These arguments about long-term consequences of priming are consistent with findings of long-term structural priming in the monolingual literature. In a well-known priming study on exposure effects in grammaticality judgements, Luka and Barsalou (2005) found that judgements of grammaticality about specific constructions increased with repeated exposure to these constructions. Such effects of multiple exposures can be seen as evidence for long-lasting priming (see e.g., Bock & Griffin, 2000; Kaschak, Kutta & Coyle, 2012; Kaschak, Kutta & Schatschneider, 2011, for related findings on long-lasting structural priming). Additionally, one of the main findings of studies on language acquisition in children (e.g., Bowerman & Choi, 2001; Tomasello, 2003) is that children learn language via copying (i.e., priming) of the adult language. Children who grow up in isolation
cannot learn a language. In short, priming serves as a mechanism of language production that can be explained in terms of cognitive, social, and developmental considerations.

Thus, structural priming may well be a mechanism underlying language change. Given that priming does not only take place within languages but also between languages, we could follow the same logic as in monolingual situations and suggest that in language contact situations, the mechanism of cross-language structural priming could very well serve as a cognitive mechanism underlying contact-induced language change (cf., e.g., Loebell & Bock, 2003). For example, structural convergence between languages could be (partly) driven by priming between languages. This potential role of cross-language structural priming as a mechanism of contact-induced language change is the focus of the present study.

5.2. The present study

We investigated the role of cross-linguistic structural priming from Dutch to Papiamento with respect to the production of dative constructions. Our main reasons for choosing these two languages are (1) that there is a large population of Papiamento-speaking people in the Netherlands and (2) that Dutch and Papiamento differ in terms of their syntactic preferences to construct dative sentences. The aim of our study is to explore whether syntactic preferences in dative sentences are different in Papiamento spoken in the Netherlands compared to Papiamento spoken in Aruba, and if so, whether this could be explained by the process of structural priming of dative constructions from Dutch to Papiamento. If this is indeed the case, then cross-language structural priming could be seen as a basic mechanism underlying contact-induced syntactic change (which would be in line with the argumentation of for example Loebell and Bock, 2003). Before we provide the details of our study, we first give some more information on Papiamento and the differences between Dutch and Papiamento with respect to how dative sentences are constructed.

Papiamento is a Creole language spoken mainly on several Caribbean islands (see Kouwenberg & Murray, 1994; Kouwenberg, 2013, for detailed information). It is a language with very little inflectional morphology, in which tense and aspect are indicated with preverbal particles. In addition, word order is fairly rigid. Papiamento has two dominant spelling variants. One is used by speakers from Aruba and is based on etymology (Kouwenberg & Murray, 1994). The other, used by speakers in Curaçao and Bonaire is mainly based on phonology. In this study, most of our participants were from Aruba, and we have conducted parts of our study in Aruba. Therefore, we will use the Aruban spelling throughout this paper.
According to *Ethnologue* (Lewis, 2009), there are 115,000 Papiamentu speakers in Curaçao, 60,000 speakers in Aruba, 8,000 speakers in Bonaire, and there are also over 80,000 speakers of Papiamento in the Netherlands. In total, there are an estimated 263,200 speakers of Papiamento in the world. In our study, we focused only on speakers from Aruba and Curaçao (most were from Aruba). On both these islands, Papiamento has a co-official status alongside Dutch. Papiamento is by far the mostly used home language and general language of daily communication, however. Although Dutch is an official language in Aruba and Curaçao (especially in institutional and governmental settings), it only plays a minor role as a home language and as a language of daily communication, and is only rarely used by the inhabitants of these islands (Jacobs, 2009; Kook & Narain, 1993; Kouwenberg & Murray, 1994; Vedder & Kook, 2001). According to Kook and Narain (1993), Dutch is even characterized as a foreign language for the Aruban and Curaçaoan people. For the speakers of Papiamento in the Netherlands, however, Dutch plays a much more important role. Because Dutch is the official language of communication, media, labour, and government in the Netherlands, Antilleans in the Netherlands will use Dutch to a much greater extent than Antilleans from Aruba or Curaçao. This has also been observed by Vedder and Kook (2001) and Kook and Narain (1993), who both state that speakers of Papiamento in the Netherlands use not only Papiamento but also Dutch in their daily lives. In addition, especially in younger speakers of Papiamento in the Netherlands, the influence of Dutch appears to be increasing. Younger speakers tend to use Dutch more often as the language of communication with their peers than Papiamento, and the number of young Antilleans that only speak Papiamento is almost non-existent (Kook & Narain, 1993; Vedder & Kook, 2001). Given these differences in the use of Dutch versus Papiamento between Aruba/Curaçao and the Netherlands, it can be assumed that the influence of Dutch on Papiamento will be stronger in the Netherlands than in Aruba/Curaçao.

As already stated, the focus of our paper is on the production of dative sentences in Dutch by Papiamento-Dutch bilingual speakers. Dutch ditransitive dative events can be described using either of two structures: a prepositional object construction, as in (1), or a double object construction, as in (2); see Colleman (2006) for more information on the Dutch dative.

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8 The Curaçao variant is spelled as Papiamentu. The Aruban variant of the language is spelled Papiamento. For convenience sake, it is also spelled as Papiamento in this article when referring to both variants.

9 A similar dative alternation structure can be found in English.
1) *Obi geeft het boek aan Pieter.*  PO:subj-verb-dir.obj-prep-ind.obj
   ‘Obi gives the book to Pieter.’

2) *Obi geeft Pieter het boek.*  DO: subj-verb-ind.obj-dir.obj
   ‘Obi gives Pieter the book.’

Papiamento does not use these dative structures in the same way as Dutch, however (Bruyn, Muysken & Verrips, 1999; Kouwenberg, 2013). Whereas PO and DO structures are both possible in Dutch and used about equally often (depending on verb biases and discourse information structure; Colleman, 2006), Papiamento as spoken on Aruba and Curaçao has a clear preference for only one structure, namely the DO. Thus, the Dutch sentences above would both have a DO structure in Papiamento:

3) *Obi ta duna Pieter e buki.*
   Obi ASP give Pieter DET book.
   ‘Obi gives Pieter the book.’

4) *E muhé ta duna e homber e bala*
   DET woman ASP give DET man DET ball
   ‘The woman gives the man the ball.’

Although Papiamento has a very strong preference for the DO structure in dative sentences, this does not mean that prepositional object structures are non-existent in Papiamento. Prepositional object structures are possible in Papiamento, but they are hardly used and are generally the dispreferred option (see also Kouwenberg, 2013). The double object structure is clearly the preferred structure in Papiamento dative sentences.

Thus, Dutch and Papiamento have different syntactic preferences in dative sentences, and, most importantly, Papiamento has a very strong (almost absolute) preference for the double-object structure in dative sentences. By studying whether Dutch syntactic preferences may prime Papiamento syntactic preferences, and may thus perhaps lead to a less absolute preference in Papiamento dative sentences, we hope to provide new insights into the role of cross-linguistic priming as a mechanism of contact-induced language (i.e., by studying the phenomenon using psycholinguistic techniques). In addition, our study may also lead to new information about the scope of cross-language structural priming itself. That is, up to now, cross-language structural priming experiments have been done predominantly with languages in which the primed structures are present and used in both languages on a regular basis (e.g., both language have a dative alternation). By studying structural priming from Dutch to Papiamento, we provide more insight into
the question whether cross-language structural priming may lead to a change in the frequency with which syntactic structures are used in specific contexts (in this case, in dative contexts).

We investigated the role of cross-linguistic structural priming from Dutch to Papiamento in two experiments. Experiment 1 was a baseline task to establish the actual syntactic preferences in the dative construction in Papiamento in the Netherlands and in Aruba. We used a movie clip description task to investigate how speakers of Papiamento from Aruba and speakers of Papiamento from the Netherlands produced dative events in Papiamento. As already discussed above, although Dutch is spoken both in Aruba and in the Netherlands, it is spoken much more in the Netherlands than in Aruba. Therefore, Papiamento speakers from the Netherlands can be expected to be exposed to Dutch to a greater extent than Papiamento speakers from Aruba. Following this logic, it can be expected that the influence of Dutch on Papiamento is larger in the speakers from the Netherlands than in the speakers from Aruba. Applying this to the production of dative sentences, we expected more PO usage in the speakers from the Netherlands than in the speakers from Aruba. Additionally, we tested the possible influence of speaker-specific variables such as age, relative language proficiency and length of residence in the Netherlands. After establishing the actual use of dative structure in Papiamento, we tested in Experiment 2 whether Dutch prime sentences influence syntactic choice in Papiamento movie clip descriptions. For this priming experiment we used a variant of the structural priming paradigm (based on Kootstra, Van Hell & Dijkstra, 2012; Loebell & Bock, 2003) in which Papiamento-Dutch bilinguals were asked to watch a movie clip and to listen to auditorily presented dative (prime) sentences in Dutch and then to watch and to describe another movie clip that visually presented dative (target) events in Papiamento (these were the same movie clips as in the baseline task). If Dutch PO structure can influence Papiamento, then this should be reflected in structural priming effects in which recent processing of a Dutch PO-structure should increase the tendency of subsequent Papiamento PO syntactic choices and recent processing of a Dutch DO-structure should increase the tendency of subsequent Papiamento DO syntactic choices. Again, we investigated not only priming effects but also speaker-specific factors, which may influence the outcome of the priming effect (e.g., age, relative language proficiency and length of residence in the Netherlands, and language attitude). Similar to the baseline task in Experiment 1, the priming experiment was conducted both in Aruba and in the Netherlands.
5.3. Experiment 1: Baseline dative sentence production

Participants

The baseline experiment included a total of 46 participants, of which 19 were Papiamento speakers residing in Aruba and 27 were Papiamento speakers residing in the Netherlands at the time of testing. Most of the participants from the Netherlands were people who were born in Aruba or Curacao and who moved to the Netherlands at a later point in their lives. Before the participants took part in the experiments, they were screened by filling out a language background questionnaire containing factual, behavioral, self-assessment\(^\text{10}\) and attitudinal questions regarding their use of Papiamento, Dutch, and other languages. One of the reasons why the participants had to complete this questionnaire was to check whether the Aruban participants had not, at any stage in their life, stayed in the Netherlands for a period of over three months (none of them had).

Self-assessment of language proficiency, confidence, pleasure and importance of speaking were rated on a scale from 1-5, where 1 indicates “very bad/not confident/no pleasure/not important/” and 5 indicates “very good/confident/much pleasure/very important. As can be seen in Table 1, the participants from Aruba rated themselves as being less proficient in Dutch than the participants from the Netherlands \((t(44) = -3.56, p = .001)\), had less pleasure \((t(44) = -2.48, p = .017)\) and confidence \((t(44) = -4.18, p < .001)\) in speaking Dutch, and found it less important to be able to speak Dutch than the participants from the Netherlands \((t(44) = -2.87, p = .006)\). This confirms our assumption stated in the Introduction that Dutch plays a more central role in the daily lives of the participants from the Netherlands than in the daily lives of the participants from Aruba. Interestingly, the participants from the Netherlands gave higher ratings on their Papiamento proficiency than the participants from Aruba \((t(44) = -4.28, p < .001)\). Although it is of course difficult to directly compare self-ratings from two independent groups of participants, this at least indicates that the participants from the Netherlands can be considered proficient speakers of Papiamento. Differences in dative sentence production between the participants from Aruba and those from the Netherlands are therefore unlikely to be attributable to a lack of Papiamento proficiency in the speakers from the Netherlands.

The participants from the Netherlands and Aruba did not differ significantly from each other on the remaining variables listed in Table 1 (except of course for Age of Arrival and Years of Residence in the Netherlands, which do not apply to the participants from Aruba). They also did not differ from each other in terms of their age of acquisition of Papiamento and Dutch. The reason for this is straightforward:

\(^{10}\) Self-rating tests are commonly used as an index of general language proficiency in many L1 and L2 processing studies (cf. Brown, 2007).
up to recently, the language of instruction in primary and secondary education in Aruba was Dutch. All participants residing in Aruba at the time of the experiment have therefore been educated under this Dutch system. Except for educational and governmental issues, Dutch does not play a major role in the daily language use of people from Aruba, however.

**Table 1:** Characteristics of the participants in Experiment 1 (Baseline), based on their answers to the language background questionnaire.

<table>
<thead>
<tr>
<th></th>
<th>Participants from Aruba</th>
<th>Participants from the Netherlands</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>19 (7♂; 12♀)</td>
<td>27 (12♂; 15♀)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>32.52 (22.34)</td>
<td>34.30 (13.52)</td>
<td></td>
</tr>
<tr>
<td>Self-rated Papiamento Proficiency †</td>
<td>4.03 (0.28)</td>
<td>4.54 (0.46)</td>
<td>***</td>
</tr>
<tr>
<td>Self-rated Dutch Proficiency †</td>
<td>3.60 (0.74)</td>
<td>4.26 (0.52)</td>
<td>***</td>
</tr>
<tr>
<td>Age of Acquisition Papiamento</td>
<td>0.13 (0.40)</td>
<td>0.30 (0.72)</td>
<td></td>
</tr>
<tr>
<td>Age of Acquisition Dutch</td>
<td>5.95 (0.52)</td>
<td>5.63 (2.38)</td>
<td></td>
</tr>
<tr>
<td>Pleasure in speaking Papiamento †</td>
<td>5.00 (0.00)</td>
<td>4.85 (0.46)</td>
<td>*</td>
</tr>
<tr>
<td>Confidence in speaking Papiamento †</td>
<td>4.95 (0.23)</td>
<td>4.67 (0.68)</td>
<td>***</td>
</tr>
<tr>
<td>Importance of speaking Papiamento †</td>
<td>4.74 (0.56)</td>
<td>4.56 (0.93)</td>
<td>**</td>
</tr>
<tr>
<td>Pleasure in speaking Dutch †</td>
<td>3.32 (1.00)</td>
<td>4.07 (1.04)</td>
<td>*</td>
</tr>
<tr>
<td>Confidence in speaking Dutch †</td>
<td>2.95 (1.03)</td>
<td>4.15 (0.91)</td>
<td>***</td>
</tr>
<tr>
<td>Importance of speaking Dutch †</td>
<td>3.84 (1.42)</td>
<td>4.70 (0.54)</td>
<td>**</td>
</tr>
<tr>
<td>Age of Arrival in NL</td>
<td>NA</td>
<td>19.11 (8.60)</td>
<td></td>
</tr>
<tr>
<td>Years of residence in NL</td>
<td>NA</td>
<td>14.74 (14.63)</td>
<td></td>
</tr>
</tbody>
</table>

† These measures are based on a five-point scale. The proficiency ratings are based on the mean of six sub-domain ratings, namely speaking, listening, writing, pronunciation, understanding and grammar.

**Stimulus materials**

For the Baseline experiment we used 64 movie clips of about 5 seconds each. Of these movie clips, 32 were critical, representing ditransitive events that could be described using a dative construction (e.g., of a woman giving a lamp to a man). The other 32 movie clips were fillers, representing transitive and intransitive events. Each movie clip represented a unique event (i.e., no movie clip was used twice in
the same experiment). See Appendix A for a complete list of all movie clips in the critical trials. After playback of a movie clip, a still screen of the movie clip’s final frame remained visible on the screen, and was accompanied by a printed Papiamento verb (see Figure 1 for an example). The still screen final frame would help participant to remember the event of the movie clip. Participants were asked to use this verb in their description. The verbs in the critical movie clips were always duna (to give; 50%) or mustra (to show; 50%). By including these verbs to the target movie clips, we could be more certain that indeed a dative sentence would be used in the critical movie clip descriptions.

The 32 critical movie clips and 32 fillers were randomized into 4 versions, in which we made sure that no more than two critical movie clips occurred consecutively. Practice items for each version included 6 randomly selected filler movie clips.

![Figure 1: Example of a critical target stimulus in the baseline experiment.](image)

**Procedure**

Both in Aruba and in the Netherlands, the experiment took place in a quiet room, in which participants were tested individually. The participants began by filling out a language background questionnaire. They then received both printed and oral instructions in Dutch for the movie clip description task, which was carried out with the participants sitting in front of a computer. Participants were told that the experimenter (HS) wanted to gain practical knowledge of the Papiamento language. Because they were led to believe that the experimenter was learning Papiamento, it
was emphasized that it was important for them to give a full description of the movie clip. The participants were instructed to verbally describe the movie clip at the moment the verb appeared on the screen (i.e., after playback of the movie clip). After each movie clip description, it was up to the participant to press a key in order to start the next movie clip, so they could choose to rest between clips if needed. The presentation of movie clips was self-paced but participants were encouraged to respond quickly in order to prevent metalinguistic processing.

The experiment started with 6 practice trials, during which the participants could get acquainted with the experimental procedure. The participants then continued with the 64 experimental trials. The movie clips were presented using E-prime software (Schneider, Eschman & Zuccolotto, 2002). Movie clip descriptions were recorded and subsequently transcribed by a native speaker of Papiamento with training in linguistics. The experiment took about 20 minutes, depending on the participants’ speed.

**Scoring and analysis**

Target movie clip descriptions were scored as (1) double object structure, (2) prepositional object structure, or (3) ‘other’. The ‘other’ responses were descriptions that were unscorable because no ditransitive construction was used, because no movie clip description was given, or because of recording failure. The statistical analyses were based on all responses except the ‘other’ responses.

We analyzed to what extent the likelihood to use a PO structure (i.e., the proportion of PO-responses out of all PO and DO responses) was influenced by speaker-specific variables that we had obtained from the background questionnaire (i.e., Age, Self-rated Papiamento Proficiency, Self-rated Dutch Proficiency, Age of Acquisition Papiamento, Age of Acquisition Dutch, Pleasure in speaking Papiamento, Confidence in speaking Papiamento, Importance of speaking Papiamento, Pleasure in speaking Dutch, Confidence in speaking Dutch, Importance of speaking Dutch, Age of Arrival in NL, Years of residence in NL) and item-specific variables (i.e., the verb that had to be used in the target movie description). We included these variables in a progressive manner, by starting with an empty model and then including the variables one by one. Variables that had a significant effect were kept in the model; variables that did not have a significant effect were removed from the model. The analyses were done with mixed-effects logistic regression, using the lme4-package (Bates & Maechler, 2010) in R 2.11.1 (R Development Core Team, 2010). We always included random intercepts for participants and items; by-item and by-participant random slopes were included only if they improved the model’s fit. Interaction effects that did not significantly improve the model’s fit were left out of the model. Model fit improvement was tested using a likelihood ratio test that examines whether the log-likelihood of one
model versus the other differs significantly from zero (cf., Baayen, Davidson & Bates, 2008).

In addition to mixed-effects logistic regression, we also analyzed the data by means of generalized estimating equations, using the gee-package in R 2.11.1. Generalized estimating equations is a technique to analyze binomial responses in a multilevel data structure, in which correlations between repeated measures within the same participants and/or items (i.e., random variables) are taken into account when calculating the effects of fixed variables (see e.g., Diggle et al., 2002; Snijders & Bosker, 2012, for more information). The main difference between generalized estimating equations and mixed-effects models is that in mixed-effects models the effects of random variables are actually estimated (in addition to the fixed effects), whereas in generalized estimating equations the focus is on the fixed effects; the potential influence of random variables are taken into account while calculating the fixed effects. The reason why we chose to analyze the data with this technique in addition to mixed-effects models is because mixed-effects models, with its strong focus on individual by-participant random variation, can sometimes have a hard time estimating by-participant random effects when there is a high degree of variability between participants, especially in cases where some participants in the sample always give the same response (i.e., when they do not show any variance). Such a scenario of many participants giving only one response (i.e., the DO-response) is likely to occur in our case, given that the DO-structure is the only possible structure in Papiamento dative sentences according to the literature (Bruyn, Muysken & Verrips, 1999; Kouwenberg & Murray, 1994). Because generalized estimating equations do not focus on the estimation of individual by-participant variance, but rather on the calculation of a population-average while keeping in mind the correlations between the repeated responses within single participants in repeated measures designs (as is our design), generalized estimating equations may have less trouble with the analysis of data with a high degree of variability between participants and a low degree of variability within participants.

The mixed-effects models will be summarized in tables that report the influence of each predictor variable by giving its parameter estimate, the standard error of the parameter estimate (SE), its z-value (which is a measure of whether that specific predictor variable makes a significant contribution to the model, similar to a predictor’s t-value in linear regression) and its p-value. The gee-models will also be summarized in tables, reporting each predictor’s parameter estimate, robust standard error of the parameter estimate (i.e., the standard error that takes within-participant correlations into account, as opposed to naïve standard errors, which do not take within-participant correlations into account), the robust z-value, and the p-value associated with the robust z-value. Because gee-analysis does not have the option of including crossed random effects (i.e., by-participant and by-item random effects), we decided to perform the gee-analysis both on the basis of a participant analysis
(similar to F1 analyses when using ANOVA) and an item analysis (similar to F2 analyses when using ANOVA). To be conservative in our interpretation of these analyses, only those variables that significantly influence the results in both the participant and item analyses will be regarded as significant.

The results will be presented separately for the participants from Aruba and those from the Netherlands. They will be compared with each other in the Discussion section.

Results

We will now discuss the results separately for the participants from Aruba and for the participants from the Netherlands.

Baseline task Aruba

The experiment yielded 608 responses in critical trials. We discarded 62 responses from the analysis, which were scored as ‘other’. The analyses are based on the remaining 546 responses.

The participants from Aruba had a strong tendency to use DO structures in their production of dative sentences in Papiamento: 97% of all responses had a DO-structure, leaving only 3% PO-responses (see also the left bar in Figure 2). This preference for the DO-structure is also reflected in the mixed-effects logistic regression analysis on the data, which is summarized in Table 2. This analysis, which is based on random intercepts for participants and items, and by-participant random slopes for the target-verb effect, shows a significant negative value of the intercept. Given that the dependent variable was the likelihood to use a PO-construction; positive values indicate a preference for PO and negative values a preference for DO. This significant negative intercept therefore indicates a significant preference to use the DO-construction over the PO-construction.

The analysis further yielded a significant effect for the target verb that the participant had to use when describing the movie clips. When the participants used the verb *mustra* (to show), the likelihood to use a PO-construction was higher than when participants had to use the verb *duna* (to give). No other item-specific or speaker-specific variables had a significant influence on the participants’ tendencies to use DO or PO in this task.
Table 2: Summary of the mixed-effects logistic regression analyses for variables predicting the likelihood of using a PO-structure in the Aruban participants in Experiment 1.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Estimate</th>
<th>SE</th>
<th>z-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>-8.100</td>
<td>1.310</td>
<td>-6.185</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Target Verb (mutra vs. duna)</td>
<td>4.028</td>
<td>1.017</td>
<td>3.961</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

Note: Standard deviations of random effect terms were: 3.274 for by-participants random intercepts, 1.655 for by-participants random slopes for Target Verb, and 0.747 for by-items random intercepts.

The gee-analysis resulted in similar conclusions as the mixed-effects analysis: The intercept value is negative and the only variable of which the robust z-value reached significance in both the participant and item analyses was the target verb. See Table 3 for a summary of the gee-analysis.

Table 3: Summary of the generalized estimating equations (gee) analyses for variables predicting the likelihood of using a PO-structure in the Aruban participants in Experiment 1.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Estimate</th>
<th>Robust SE</th>
<th>Robust z</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participant analysis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Intercept)</td>
<td>-2.537</td>
<td>1.612</td>
<td>-1.574</td>
<td>.115</td>
</tr>
<tr>
<td>Target Verb (mustra vs. duna)</td>
<td>1.372</td>
<td>0.387</td>
<td>3.543</td>
<td>&lt; .001</td>
</tr>
<tr>
<td><strong>Item analysis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Intercept)</td>
<td>-2.537</td>
<td>0.902</td>
<td>-2.812</td>
<td>.005</td>
</tr>
<tr>
<td>Target Verb (mustra vs. duna)</td>
<td>1.372</td>
<td>0.567</td>
<td>2.418</td>
<td>.016</td>
</tr>
</tbody>
</table>
Figure 2: The tendency to use PO and DO responses in the baseline task in Aruba and in the Netherlands.

Baseline task the Netherlands

The baseline experiment with the participants from the Netherlands yielded 864 responses in critical trials. There were 64 responses that were scored as ‘other’ and discarded from the analysis. The analyses are based on the remaining 800 responses.

The participants from the Netherlands still had a strong tendency to use DO structures in their production of dative sentences in Papiamento, though not as strong as the participants from Aruba: The participants from the Netherlands produced a PO structure in 12% of the cases, and a DO structure in 88% of the cases (see Figure 2 for the difference in PO relative to DO responses in Aruba compared to the Netherlands).

The mixed-effects logistic regression analysis on the data of the participants from the Netherlands did not reach convergence, most probably because there was a high degree of variability between participants and a low degree of variability within participants. That is, although the majority of participants predominantly (and sometimes always) used the DO-construction, there were also participants who had a strong tendency to use the PO-construction. As explained earlier, such a situation of a high degree of variability between participants (and sometimes non-variability within participants) can make it difficult for mixed-effects models to estimate the by-participant random effects. Therefore, we rely on the gee-analysis for this part of the results.
The gee-analysis that best fits the data is summarized in Table 4. Both the participant and item analyses show a negative value of the intercept, which confirms the general preference to use the DO-construction over the PO-construction (see also Figure 2). The analysis further yielded a significant effect for the participants’ age on their tendency to produce PO or DO responses. The parameter estimates of the age effect have a negative value, indicating that the tendency to produce PO constructions (i.e., the dependent variable) became weaker with increasing age. In other words, younger participants had a stronger tendency to produce PO responses than older participants. No other item-specific or speaker-specific variables had a significant influence on the participants’ tendencies to use DO or PO in this task.

Table 4: Summary of the generalized estimating equations (gee) analyses for variables predicting the likelihood of using a PO-structure in the participants from the Netherlands in Experiment 1.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Estimate</th>
<th>Robust SE</th>
<th>Robust z</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participant analysis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Intercept)</td>
<td>-0.799</td>
<td>0.509</td>
<td>-1.569</td>
<td>.116</td>
</tr>
<tr>
<td>Participant’s Age</td>
<td>-0.035</td>
<td>0.014</td>
<td>-2.398</td>
<td>.016</td>
</tr>
<tr>
<td><strong>Item analysis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Intercept)</td>
<td>-0.799</td>
<td>0.219</td>
<td>-3.638</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Participant’s Age</td>
<td>-0.035</td>
<td>0.006</td>
<td>-5.194</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

**Discussion**

The analyses yielded effects of Target Verb in the participants from Aruba, and effects of the participants’ age in the participants from the Netherlands. In addition, visual inspection of Figure 2 suggests that there are differences in syntactic choices between the participants from Aruba and the participants from the Netherlands. Below, we first discuss the effects of Target Verb in the participants from Aruba and the effect of the participants’ age in the participants from the Netherlands. We will then further analyze and discuss the differences in syntactic choice between the two participant groups.

The effect of the Target Verb in the participants from Aruba (i.e., most PO structures were produced with the verb *mustra*) can be related to evidence from other studies suggesting that specific verbs can have specific tendencies to be produced with a specific structure (i.e., *verb bias*; see e.g., Bernolet & Hartsuiker, 2010; Colleman, 2006; Kootstra & Doedens, revision under review). Apparently, the verb *mustra* has a stronger bias towards the PO structure than the verb *duna* in the participants from Aruba. It has to be kept in mind, though, that this effect was based on a situation in which nearly all responses in the critical trials had a DO-structure:
In the entire data from Aruba there were only 19 PO-responses (out of 546 data points), of which 15 were with the verb *mustra* and 4 were with the verb *duna*. Clearly, more research is needed to draw firm conclusions on the role of verb biases in Papiamento.

The effect of the participants’ age in the participants from the Netherlands can be linked to the research discussed in the introduction indicating that younger language users often show higher degrees of flexibility of linguistic behavior than older language users (e.g., Birdsong, 2006). Likewise, in sociolinguistic studies of language change, it has often been observed that peaks of language change in progress and innovative forms are often found in younger language users (e.g., Kirkham & Moore, 2013; Labov, 2001). This can be reconciled with the notion that adolescents and young adults are often influenced to a relatively high degree by the language use in the environment. In the case of the Papiamento speakers in the Netherlands, the linguistic environment is shaped by Dutch to a high degree, because Dutch is the primary language of education, public life, and media in the Netherlands. This leads to a relatively high likelihood that elements from Dutch are integrated in Papiamento (such as in the case of the present study: the PO construction), especially in relatively young speakers. From this perspective, the age effect in the participants from the Netherlands can be interpreted as an effect of language change that is caused by a high degree of contact with Dutch.

The interpretation of contact-induced language change is further strengthened when we directly compare the syntactic choices from both groups of participants with each other (see Figure 2). We performed an analysis in which the data from Aruba and the Netherlands were combined. In this analysis, we specifically focused on the question whether the observed difference in dative syntactic choices between the participants from Aruba and from the Netherlands was significant. To investigate this question, we included the variables that reached significance in the separate baseline analyses (i.e., target verb and participants’ age) as control predictors, because these factors could otherwise confound results from the combined analysis. The combined analysis was done with generalized estimating equations (mixed-effects modeling again did not lead to convergence of the statistical model). The combined analysis indicated that, indeed, the difference in response pattern between the participants from Aruba and those from the Netherlands was significant (participants analysis: robust z-value = 2.032, \( p = .042 \); item analysis: robust z-value = 5.829, \( p < .001 \)). This outcome is confirmed by a chi square analysis, showing that the tendency to produce PO structures in Papiamento is significantly higher in the speakers from the Netherlands than in the speakers from Aruba (\( \chi^2 (1) = 34.75, \ p < .001 \); note, however, that the chi square analysis does not take the repeated measures design of our experiment into account).

The combined analysis indicates that the tendency to produce PO structures in Papiamento is higher in the Netherlands than in Aruba. It is probable that this
difference between the data from Aruba and from the Netherlands is due to language contact with Dutch in the participants from the Netherlands, especially because the age effect in the participants from the Netherlands can also be partly explained by a relatively high degree of language contact in younger speakers. To test the plausibility of the argument that dative sentence production in Papiamento in the Netherlands is influenced by Dutch, it is necessary to experimentally confirm that it is indeed possible that Dutch dative sentence constructions can influence the production of dative sentences in Papiamento. We tested this by means of a cross-linguistic structural priming experiment.

5.4. Experiment 2: cross-linguistic priming in dative sentence production

Participants

The priming experiment included a total of 62 new participants from the same population as in Experiment 1. Of these 62 participants, 25 were Papiamento speakers residing in Aruba and 37 were Papiamento speakers residing in the Netherlands at the time of testing. Just as in Experiment 1, most of the participants from the Netherlands were people who were born in Aruba or Curaçao and who moved to the Netherlands at a later point in their lives. The participants’ background characteristics are given in Table 5.

As can be seen in Table 5, the participants from Aruba rated themselves as being less proficient in Dutch than the participants from the Netherlands ($t(60) = 5.83, p < .001$), had less pleasure ($t(60) = 4.16, p < .001$) and confidence ($t(60) = 5.92, p < .001$) in speaking Dutch, and found it less important to be able to speak Dutch than the participants from the Netherlands ($t(60) = 4.22, p < .001$). The participants from the Netherlands had also started to learn Dutch just a bit earlier in their lives than the participants from Aruba ($t(60) = -3.14, p = .003$), although it has to be noted that both groups started to learn Dutch at a relatively early age in their lives. This confirms our assumption stated in the Introduction that Dutch plays a more central role in the daily lives of the participants from the Netherlands than in the daily lives of the participants from Aruba. The participants from Aruba and those from the Netherlands did not differ significantly from each other in terms of their self-ratings on their Papiamento proficiency.
Table 5: Characteristics of the participants in Experiment 2 (Priming), based on their responses to the language background questionnaire.

<table>
<thead>
<tr>
<th></th>
<th>Participants from Aruba</th>
<th>Participants from the Netherlands</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>25 (11♂; 14♀)</td>
<td>37 (18♂; 19♀)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>39.88 (13.87)</td>
<td>34.27 (14.25)</td>
<td></td>
</tr>
<tr>
<td>Self-rated Papiamento Proficiency $^1$</td>
<td>4.61 (0.54)</td>
<td>4.45 (0.69)</td>
<td></td>
</tr>
<tr>
<td>Self-rated Dutch Proficiency $^1$</td>
<td>3.37 (0.85)</td>
<td>4.39 (0.53)</td>
<td>***</td>
</tr>
<tr>
<td>Age of Acquisition Papiamento</td>
<td>0.00 (0.00)</td>
<td>0.22 (0.58)</td>
<td></td>
</tr>
<tr>
<td>Age of Acquisition Dutch</td>
<td>5.88 (0.83)</td>
<td>4.35 (2.32)</td>
<td>**</td>
</tr>
<tr>
<td>Pleasure in speaking Papiamento $^1$</td>
<td>4.96 (0.20)</td>
<td>4.70 (0.78)</td>
<td></td>
</tr>
<tr>
<td>Confidence in speaking Papiamento $^1$</td>
<td>4.96 (0.20)</td>
<td>4.59 (0.98)</td>
<td></td>
</tr>
<tr>
<td>Importance of speaking Papiamento $^1$</td>
<td>4.92 (0.28)</td>
<td>4.70 (0.62)</td>
<td></td>
</tr>
<tr>
<td>Pleasure in speaking Dutch $^1$</td>
<td>3.08 (1.32)</td>
<td>4.27 (0.93)</td>
<td>***</td>
</tr>
<tr>
<td>Confidence in speaking Dutch $^1$</td>
<td>2.60 (1.29)</td>
<td>4.27 (0.93)</td>
<td>***</td>
</tr>
<tr>
<td>Importance of speaking Dutch $^1$</td>
<td>3.92 (1.35)</td>
<td>4.89 (0.31)</td>
<td>***</td>
</tr>
<tr>
<td>Age of Arrival in NL</td>
<td>DNA</td>
<td>19.49 (11.90)</td>
<td></td>
</tr>
<tr>
<td>Years of residence in NL</td>
<td>DNA</td>
<td>14.61 (10.08)</td>
<td></td>
</tr>
</tbody>
</table>

$^1$ These measures are based on a five-point scale. The proficiency ratings are based on the mean of six sub-domain ratings, namely speaking, listening, writing, pronunciation, understanding and grammar.

Stimulus materials

A trial in the priming task consisted of an auditorily presented (prime) sentence in Dutch, followed by a (target) movie clip to be described in Papiamento. We used the same 64 movie clips as in the Baseline Experiment, but now we added a Dutch auditory prime sentence to each movie clip.

The same 32 movie clips as in Experiment 1 were used as critical movie clips to elicit dative sentences in Papiamento. The prime sentences in these trials were Dutch PO and DO sentences. Table 6 gives examples of the experimental conditions (See Appendix B for a complete list of all critical prime sentences and target movie clips).

The table shows that not only priming of sentence structure was manipulated, but also lexical repetition of the verb between the prime sentence and target movie clip. This was done to investigate the potential influence of a so-called translation-equivalent boost of structural priming, in which the strength of priming is enhanced by repetition of the verb between the prime sentence and target description (e.g., Schoonbaert et al., 2007). Although not a central question in our study, we were
interested in whether such a manipulation of verb repetition would influence syntactic choices in the current priming task.

**Table 6**: Examples of the experimental conditions in the priming task.

<table>
<thead>
<tr>
<th>Prime repeated prime/target</th>
<th>Auditory prime sentence</th>
<th>Target movie clip</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO  Yes</td>
<td><em>De jongen geeft de sleutel aan het meisje</em> (the boy gives the key to the girl)</td>
<td>See Figure 1 (with verb duna, meaning to give)</td>
</tr>
<tr>
<td>DO  Yes</td>
<td><em>De jongen geeft het meisje de sleutel</em> (the boy gives the girl the key)</td>
<td></td>
</tr>
<tr>
<td>PO  No</td>
<td><em>De jongen toont de sleutel aan het meisje</em> (the boy shows the key to the girl)</td>
<td>See Figure 1 (with verb duna, meaning to give)</td>
</tr>
<tr>
<td>DO  No</td>
<td><em>De jongen toont het meisje de sleutel</em> (the boy shows the girl the key)</td>
<td></td>
</tr>
</tbody>
</table>

*Note: See Figure 3 for a depiction of the priming task procedure.*

In addition to the critical items, a list of 32 filler items, consisting of 17 Papiamento verbs, either transitive or intransitive, was added to disguise the priming manipulation. These were the same filler movie clips as in Experiment 1, but now accompanied by an auditorily presented Dutch transitive or intransitive sentence.

The prime-target items and the filler items were combined into four lists. Each prime-target item occurred in a different condition across lists, and within lists all conditions occurred equally often (latin square design). Each list was pseudo-randomized into three versions, in which primes and targets of a prime-target pair were never interrupted by filler items and in which filler items themselves were ordered randomly around the prime-target pairs. No more than two critical prime-target trials occurred consecutively. Practice items for each version were based on 6 randomly selected filler trials.
Procedure

As in Experiment 1, the participants were tested individually in a quiet room, in which they first filled out the language background questionnaire and were then seated in front of a laptop to receive the experiment instructions and perform the experiment. To disguise the priming paradigm, the participants were told that they had to do a listening task in which they had to determine whether a Dutch auditory sentence (i.e., the prime sentence) matched the movie clip that they saw on the screen of their laptop. The participants had to press a key marked with a happy smiley face to indicate that the sentence matched the clip and a key with a sad smiley face to indicate that the sentence did not match the movie clip. After the decision task, they were shown another movie clip (i.e., the target movie clip), which they had to describe in Papiamento, based on the same instructions as in Experiment 1. See Figure 3 for a depiction of the task procedure. Thus, the priming experiment differed from the baseline task because of the inclusion of a listening cover task with Dutch prime sentences. For the remaining part, the participants were told, just as in the baseline experiment, that they could perform the task at their own pace, and were made aware that they could take breaks whenever they felt they needed to after they had described a movie clip. All further aspects of the procedure were exactly the same as in Experiment 1. The experiment lasted about 45 minutes, depending on the participants’ speed.
**Scoring and analysis**

The data from the priming experiments were scored, analyzed, and reported in the same way as in the baseline experiments. With respect to the analysis, the only difference was that in the priming experiments we always included primed structure (PO or DO in the prime sentence) as a predictor in the statistical model, because our research question was focused on the role of the primed structure on Papiamento dative sentence production. We also investigated the potential role of verb overlap between the prime and target, but if this effect would not reach significance, it would be left out of the model (just like all other effects not reaching significance).

**Results**

We will now present the results separately for the participants from Aruba and for the participants from the Netherlands.

**Priming task Aruba**

The experiment yielded 800 responses in critical trials, of which 35 responses were scored as ‘other’ and discarded from the analysis. The analyses are based on the remaining 765 responses.

Figure 4 gives an overview of the participants’ syntactic choices per priming condition. A summary of the mixed-effects logistic regression analysis that best fits the data is given in Table 7. This analysis is based on random intercepts for participants and items, and by-participant random slopes for the primed structure. The analysis shows a negative value of the intercept. Similar to the baseline experiments, this indicates a general preference in the participants to use the DO-construction over the PO-construction (the dependent variable was the likelihood to use a PO-construction, so positive values would indicate a preference for PO and negative values would indicate a preference for DO). The analysis further yielded a positive significant effect for the primed structure. The tendency to produce a PO Papiamento sentence was enhanced when the Dutch prime sentence had a PO sentence (and, by complement, vice versa for DO primes and targets). No other item-specific or speaker-specific variables had a significant influence on the participants’ tendencies to use DO or PO in this task.

The gee-analysis (summarized in Table 8) led to the same conclusions as the mixed-effects analysis, with negative intercept values and a significant effect for the primed structure.
**Figure 4**: The tendency to use PO and DO responses as a function of PO and DO primes in the priming task in the participants from Aruba.

**Table 7**: Summary of the mixed-effects logistic regression analyses for variables predicting the likelihood of using a PO-structure in the Aruban participants in Experiment 2.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Estimate</th>
<th>SE</th>
<th>z-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>-5.669</td>
<td>0.883</td>
<td>-6.416</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Primed Structure (PO vs. DO)</td>
<td>2.038</td>
<td>0.414</td>
<td>4.918</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

*Note*: Standard deviations of random effect terms were: 3.599 for by-participants random intercepts, 0.838 for by-participants random slopes for Primed Structure, and 0.653 for by-items random intercepts.

**Table 8**: Summary of the generalized estimating equations analyses for variables predicting the likelihood of using a PO-structure in the participants from Aruba in Experiment 2.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Estimate</th>
<th>Robust SE</th>
<th>Robust z</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participant analysis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Intercept)</td>
<td>-2.308</td>
<td>0.530</td>
<td>-4.351</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Primed Structure (PO vs. DO)</td>
<td>0.586</td>
<td>0.201</td>
<td>2.914</td>
<td>.004</td>
</tr>
<tr>
<td><strong>Item analysis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Intercept)</td>
<td>-2.308</td>
<td>0.179</td>
<td>-12.837</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Primed Structure (PO vs. DO)</td>
<td>0.586</td>
<td>0.228</td>
<td>2.565</td>
<td>.010</td>
</tr>
</tbody>
</table>
Priming task Netherlands

The priming experiment in the Netherlands yielded 1184 responses in critical trials, of which 38 responses were scored as ‘other’ and discarded from the analysis. The analyses are based on the remaining 1146 responses.

Figure 5 gives an overview of the participants’ syntactic choices per priming condition. A summary of the mixed-effects logistic regression analysis that best fits the data is given in Table 9. This analysis is based on random intercepts for participants and items, and by-participant random slopes for the primed structure. The analysis shows a negative value of the intercept. This shows that, similar to the baseline experiments, there was a general preference in the participants to use the DO-construction over the PO-construction (see also Figure 5). The analysis further yielded a significant effect for the primed structure. The tendency to produce a PO Papiamento sentence was higher when the Dutch prime sentence had a PO sentence (and vice versa for DO primes and targets). Finally, the analysis yielded a significant effect of the participants’ age. Similar to the baseline experiment in the Netherlands, younger participants had a stronger tendency to produce PO structures than older participants. No further item-specific or speaker-specific variables had a significant influence on the participants’ tendencies to use DO or PO in this task, neither as a main effect, nor in interactions.

The gee-analysis (summarized in Table 10) led to the same conclusions as the mixed-effects analysis, yielding negative intercept values and significant effects for the primed structure and participants’ age, both in the participant analysis and in the item analysis. The gee-analysis therefore confirms the findings from the mixed-effects analysis.

Figure 5: The tendency to use PO and DO responses as a function of PO and DO primes in the priming task in the participants from the Netherlands.
Table 9: Summary of the mixed-effects logistic regression analyses for variables predicting the likelihood of using a PO-structure in the participants from the Netherlands in Experiment 2.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Estimate</th>
<th>SE</th>
<th>z-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>-2.729</td>
<td>1.127</td>
<td>-2.421</td>
<td>.015</td>
</tr>
<tr>
<td>Primed Structure (PO vs. DO)</td>
<td>1.415</td>
<td>0.541</td>
<td>2.614</td>
<td>.008</td>
</tr>
<tr>
<td>Participant’s Age</td>
<td>-0.091</td>
<td>0.035</td>
<td>-2.591</td>
<td>.009</td>
</tr>
</tbody>
</table>

Note: Standard deviations of random effect terms were: 1.679 for by-participants random intercepts, 1.067 for by-participants random slopes for Primed Structure, and 0.876 for by-items random intercepts.

Table 10: Summary of the generalized estimating equations (gee) analyses for variables predicting the likelihood of using a PO-structure in the participants from the Netherlands in Experiment 2.

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Estimate</th>
<th>Robust SE</th>
<th>Robust z</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participant analysis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Intercept)</td>
<td>-1.680</td>
<td>1.000</td>
<td>-1.680</td>
<td>.093</td>
</tr>
<tr>
<td>Primed Structure (PO vs. DO)</td>
<td>1.274</td>
<td>0.375</td>
<td>3.389</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Participant’s Age</td>
<td>-0.082</td>
<td>0.034</td>
<td>-2.422</td>
<td>.015</td>
</tr>
<tr>
<td><strong>Item analysis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Intercept)</td>
<td>-1.680</td>
<td>0.552</td>
<td>-3.039</td>
<td>.002</td>
</tr>
<tr>
<td>Primed Structure (PO vs. DO)</td>
<td>1.274</td>
<td>0.369</td>
<td>3.446</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Participant’s Age</td>
<td>-0.082</td>
<td>0.020</td>
<td>4.116</td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

Discussion

The analyses above show that in both the participants from Aruba and those from the Netherlands, Dutch prime sentences influenced syntactic choices in Papiamento. In other words, prior exposure to Dutch sentences can influence syntactic choices in Papiamento. This supports our conclusion from Experiment 1 that the differences in syntactic choices between the participants from the Netherlands and Aruba may well be influenced by more frequent exposure to Dutch in the participants from the Netherlands. Our priming findings are also consistent with the argument made in the introduction that cross-linguistic priming from Dutch to Papiamento may be an important factor underlying contact-induced language change.

The age effect, which we found in the participants from the Netherlands, further supports the argument of language contact with Dutch. As explained earlier, younger speakers are typically more often influenced by language use from the environment, which in the case of the speakers from the Netherlands is heavily shaped by Dutch. The age effect in the priming experiment also reinforces the age
effect that we found in Experiment 1, which was based on a different set of
participants from the same population. The observed age effect in the participants
from the Netherlands is therefore a robust finding.

To gain more insight into the influence of age in our data set, we combined the
data from Experiment 1 and 2 and performed a correlation analysis of the
participants’ age with the other background variables that we had gathered from the
background questionnaire (i.e., self-assessment on the participants language
proficiency and further attitudinal questions regarding their use of Papiamento and
Dutch in terms of confidence, importance and having fun when speaking Dutch or
Papiamento; see Tables 1 and 5). It turned out that, in the participants from the
Netherlands, younger participants judged themselves to be less confident ($r = .373,$
$p = .002$) and less proficient ($r = .330,$ $p = .008$) in Papiamento than older
Papiamento speakers, and they also found Papiamento to be less important than the
older speakers from the Netherlands ($r = .288,$ $p = .021$). Interestingly, however, the
younger speakers from the Netherlands also judged themselves to be less proficient
($r = .277,$ $p = .027$) and less confident ($r = .369,$ $p = .003$) in Dutch, compared to the
older speakers. These differences between the younger and older speakers in the
Netherlands may point to a situation in which not only Papiamento but also Dutch
spoken by the younger speakers in the Netherlands is still somewhat unstable. This
may lead to more variation in language use and a higher probability of cross-
language interactions than in older speakers.

Importantly, these correlations of age with language proficiency and attitude
ratings were hardly present in the speakers from Aruba (the only significant
correlation we found was that younger speakers from Aruba tend to judge Dutch as
more important than older speakers from Aruba, $r = -.301,$ $p = .047$; this has not
played a role in their syntactic choices, however, as we did not observe any age
effects or other speaker-specific effects in the Aruban data). Therefore, the
correlations that we found in the speakers from the Netherlands are likely related to
the language contact situation of Papiamento speakers in the Netherlands.

Another interesting observation is that, although the priming effect was present
in both groups of participants, the priming effect seemed to be particularly strong in
the participants from Aruba, compared to the participants from the Netherlands. We
tested this by combining the data from Aruba and the Netherlands, and we found
that the priming effects in Aruba and the Netherlands were in fact not significantly
different from each other (no significant interaction between Primed Structure and
Participant Group, neither in mixed-effects analysis nor in gee-analysis). We did
find, however, that the overall number of PO structures was higher in Aruba than in
the Netherlands in the priming task (mixed effects analysis: $z = -2.375,$ $p = .017$;
gee-analysis participants: robust $z = -2.754,$ $p = .006$; gee-analysis items: robust $z = -
5.341,$ $p < .001$). This may seem counterintuitive compared to Experiment 1, but can
be explained. It has been found in recent studies that adaptation effects in priming
tasks are especially strong when the primes are surprising with respect to what the language user would predict on his/her prior language experience (e.g., Bernolet & Hartsuiker, 2010; Jaeger & Snider, 2007). According to these studies, priming effects reflect a form of learning, called expectation adaptation, in which the adaptation effects are especially strong when the structure of the prime sentence is not expected by the participants. In the case of Papiamento speakers in Aruba, it can be argued that PO dative sentences (even in Dutch) are less expected than DO dative sentences. This may cause the speakers from Aruba to produce a relatively high number of PO sentences (even though the priming effect itself was not significantly different from the priming effect in the participants from the Netherlands).

One final interesting finding in the speakers from Aruba was that they did not only produce a relatively high number of PO sentences after PO primes, but also produced a number of PO sentences after DO primes (see Figure 4). This indicates that priming effects need not be purely ‘local’, in the sense that priming only takes place within one single prime-target item. Rather, this observation suggests that there are also more global, longer-term priming mechanisms at work, in which priming effects transcend beyond the level of single trials. Related kinds of long-term priming effects within experimental lists have been found earlier in monolingual studies on syntactic priming (e.g., Bock & Griffin, 2000), and provide important evidence in support of the argument that priming in language use has long-term consequences, which could eventually lead to language change.

5.5. General discussion and conclusion

The goal of this study was to test the influence of Dutch syntactic structure on the production of dative sentences in Papiamento. In Experiment 1, we used a movie clip description task to investigate how speakers of Papiamento from Aruba and speakers of Papiamento from the Netherlands produced dative events in Papiamento. In Experiment 2, we used the same movie clip description task with a new sample of speakers of Papiamento from Aruba and speakers of Papiamento from the Netherlands, but now the task was embedded in a priming paradigm. Each movie clip description was preceded by a Dutch prime sentence that either had a PO or a DO structure. In Experiment 1 we found, first of all, that speakers of Papiamento from the Netherlands produced significantly more PO-structures in Papiamento than speakers of Papiamento from Aruba. This was especially the case in relatively young speakers in the Netherlands (as compared to all speakers in Aruba, where the age of the participants was not a significant factor). In Experiment 2, we further found effects of structural priming from Dutch to Papiamento in both groups of participants; there also was a similar age effect in Experiment 2 as in Experiment 1, in that younger speakers from the Netherlands tended to produce more PO structures than older speakers from the Netherlands. Like in Experiment 1, this age effect was
not present in the speakers from Aruba. As we will argue below, these results altogether provide indications that cross-linguistic structural priming is a key mechanism underlying contact-induced language change.

As noted, we found differences in syntactic choices in the baseline task between Aruba and the Netherlands: Papiamento speakers from the Netherlands used more PO structures than Papiamento speakers from Aruba, who hardly used PO structures. This change in syntactic preferences between speakers from Aruba and speakers from the Netherlands can be seen as an indication of contact-induced language change: the Papiamento usage of the speakers from the Netherlands is influenced by Dutch syntactic preferences. After all, as mentioned earlier in this chapter, PO and DO structures are used about equally often in Dutch, whereas in Papiamento there is a strong preference for the DO structure. The findings from Experiment 1 indicate that this preference for the DO structure is weaker in speakers from the Netherlands than in speakers from Aruba. The participants from the Netherlands were more frequently exposed to Dutch than the participants from Aruba, and Dutch plays a more important role in the daily lives of the participants from the Netherlands (see Tables 1 and 5 on the participants’ language background; see also Kook & Narain, 1993; Vedder & Kook, 2001, who make similar observations on the relative roles of Dutch and Papiamento in Antilleans in the Netherlands). Hence, a likely conclusion that can be drawn is that the differences in syntactic choices between the speakers from the Netherlands and the speakers from Aruba are caused by the influence of Dutch syntactic preferences.

If this hypothesis about the influence of Dutch syntactic preferences on Papiamento syntactic choices is true, then it should be the case that structural priming of dative structures from Dutch to Papiament is possible. Put differently, if structural priming of dative structures from Dutch to Papiamento would not be possible, then the hypothesis of Dutch influence on Papiamento syntactic preferences would be difficult to maintain. In the priming task we therefore tested the assumption that was generated on the basis of the baseline task. Recall that our assumption is that Dutch will have an influence on the structural preferences of dative constructions of Papiamento speaker’s. We indeed found a structural priming effect, indicating that Dutch influence on Papiamento syntactic preferences is in fact possible.

These priming findings between Dutch and Papiamento provide a link between psycholinguistic aspects of bilingual language processing (e.g., Hartsuiker & Pickering, 2008) and aspects of contact-induced language change (e.g., Thomason & Kaufman, 1988; Winford, 2003). This is consistent with theoretical accounts on the possible long-term consequences of priming that were already discussed in the introduction (e.g., Jäger & Rosenbach, 2008; Luka & Barsalou, 2005). These accounts were focused mostly on within-language long-term consequences of priming. The novelty of our study is that we have shown that the same priming
mechanism can also have between-language consequences, for example in the form of contact-induced language change. This long-term role of between-language priming was already pointed at by Loebell and Bock (2003); our findings confirm their suggestions.

Although our findings and interpretations provide strong suggestions that cross-linguistic priming is a potential mechanism of contact-induced language change, the experimental evidence is of course based on short-term priming effects. These short-term priming effects are consistent with the findings from the baseline task, which potentially points to contact-induced language change. We suggest that these findings from the baseline task may well be caused by continuous cross-language priming, resulting in contact-induced language change. Although it would seem unthinkable to say that priming does not affect language usage in any way, we cannot be completely certain of the actual effects it has in the long run. The reason for this is simply because language change is a slow process, and only recently have we begun to study the effects of priming in combination with language change. This does not mean, however, that evidence of long-term priming effects does not exist. Indeed, as discussed in the introduction, studies on structural priming in monolinguals have found compelling evidence of priming effects as a function of repeated exposure (Luka & Barsalou, 2005) and priming effects between experimental tasks (Kaschak, Kutta & Coyle, 2012; Kaschak, Kutta & Schatschneider, 2011). Moreover, in a recent study, Kootstra and Doedens (revision under review) investigated syntactic choice patterns in Dutch-English bilinguals in Dutch and in English in two separate experimental tasks. They found that the bilinguals’ syntactic choices in the first task (in one language) influenced their syntactic choices in the other task (in the other language). This indicates that, similar to monolingual priming effects, cross-language priming effects are not only limited to immediate prime-target sequences, but can also be long-lasting and continuous (between experimental blocks). This finding strengthens the notion that cross-linguistic priming may have long-term consequences, one of which may be contact-induced language change, as shown by our comparison of speakers from Aruba and speakers from the Netherlands.

The priming effects also show that syntactic cross-language activation, in the form of cross-language priming, can even take place in a situation in which one of the primed structure (in this case, the PO structure) is highly dispreferred in the target language. Earlier studies on cross-language syntactic priming (e.g., Bernolet, Hartsuiker & Pickering, 2007; Cai, Pickering, Yan & Branigan, 2011; Desmet & Declercq, 2006; Hartsuiker, Pickering & Veltkamp, 2004; Kantola & Van Gompel, 2011; Meijer & Fox Tree, 2003; Schoonbaert, Hartsuiker & Pickering, 2007) were focused mostly on languages in which both primed structures are present and used on a relatively regular basis in both languages. These studies were generally done to test the existence of cross-language activation at the syntactic level of language
production. Our findings extend the empirical basis of cross-linguistic structural priming research, and provide more insight into the scope of cross-language structural priming. Apparently, cross-language activation in the bilingual mind even takes place in a situation where one of the syntactic alternatives is highly dispreferred.

On the basis of the discussion so far, we conclude that the increased use of PO structures in the participants from the Netherlands in Experiment 1 is caused by intensive contact with Dutch, with priming as the presumed underlying mechanism (based on evidence from Experiment 2). This conclusion on contact-induced language change is further strengthened by the fact that the increased use of PO structures was especially high in younger speakers in the Netherlands. As also stated by Vedder and Kook (2001) (see also the introduction of this chapter), younger speakers in the Netherlands use Papiamento less often, and Dutch more often, than older speakers, possibly leading to a situation in which linguistic regularities in Papiamento (in our case, syntactic preferences in the dative construction) are less stable and less robust in younger speakers. This is very understandable, because younger speakers in the Netherlands are often still attending education, where Dutch is the general language of communication and plays a much more important role than in educational institutions in Aruba. Dutch will therefore likely play a rather important role in the daily lives of young Antilleans in the Netherlands, and Papiamento will play a less important role, especially compared to older speakers of Papiamento in the Netherlands. Our data from the language background questionnaires are in line with this notion; they also indicate that younger speakers of Papiamento in the Netherlands were generally less confident in Papiamento, judged themselves to be less proficient in Papiamento, and found Papiamento less important than older speakers of Papiamento in the Netherlands. These differences between younger and older speakers were not present in our data from Aruba, thus indicating that they are specific to the way in which Papiamento is used in the Netherlands. From this perspective, it is likely that the age effect is due to the intensive contact between Dutch and Papiamento in young Papiamento speakers in the Netherlands.

The age effect that we found in the speakers from the Netherlands can also be related to the sociolinguistic observations on age effects discussed in the introduction (e.g., Kerswill, 1996; Kirkham & Moore, 2013; Labov, 2001). According to these sociolinguistic studies, language change processes are often the most intense in younger people, leading to the conclusion that younger people are the true catalysts of language change. Whereas these studies typically explain these processes in terms of acts of identity (e.g., Cornips, 2008; Holmes & Meyerhoff, 2003; Kerswill, 1996; Le Page & Tabouret-Keller, 1985; Milroy & Gordon, 2003; Tagliamonte & D’Arcy, 2009.), it may in the case of language contact situations also be that the higher intensity of language contact in younger speakers (at least in
younger speakers of Papiamento in the Netherlands) may lead to a higher degree of variation in daily language use and linguistic environment. Combined with the notion that people’s memory and learning ability tends to decrease with increasing age (see e.g., Birdsong, 2006, for a review), this influence of variation in the linguistic environment is probably strongest in younger people. That is, language processing in younger people can be seen as more malleable and flexible to new input than language processing in older people (see also Hernandez, Li & MacWhinney, 2005). Interestingly, this may not only have consequences for Papiamento, but also for the Dutch spoken by these younger speakers, as we found that the younger speakers in the Netherlands also tended to have lower self-perceptions of their proficiency and confidence in Dutch compared to the older speakers in the Netherlands. It may well be the case that both Papiamento and Dutch in the younger speakers are not yet as cognitively entrenched as in the older speakers. However, given that the target language in our experiments was always Papiamento, we cannot make firm statements on this suggestion; future experiments should therefore also focus on the Dutch language use in this population. It may then also be interesting to test both priming from Papiamento to Dutch and from Dutch to Dutch, in order to discover whether cross-language priming effects are equally strong as within-priming effects in this population (cf., Kantola & Van Gompel, 2011). To investigate the same question with Papiamento as the target language, it would also be important to perform a study on priming from Papiamento to Papiamento.

In addition to experiments, another way in which future research could provide insight into the roles of priming and speaker variables in contact-induced language change is the use of corpora. That is, it has been found earlier that structural priming effects are not only present in experiments, but also in corpora (e.g., Bresnan et al., 2007; Gries, 2005). This indicates that priming effects are not merely experimental artifacts, but are actual facts of daily language use. While this notion of priming as a mechanism of daily language use already strengthens our hypothesis about priming as a potential mechanism of language change, it will of course be ideal if we could also cross-validate our cross-language priming findings with findings from bilingual corpora. This would also increase the ecological validity of our results (see also Gullberg, Indefrey & Muysken, 2009).

Another idea for future research would be to include more detailed sociolinguistic background information. That is, as we argue above, the age effect is quite likely related to the participants’ daily language use. However, our language background questionnaire only measured self-ratings of the participant’s language proficiency, confidence, and attitude. To gain more insight into the exact role of daily language use with respect to processes of language change, future studies should collect detailed information on the bilinguals’ daily language use in different domains and different settings, and combine this with more detailed measures of
language proficiency (e.g., standardized tests). In this first study on the potential of cross-language structural priming for contact-induced language change, we first wanted to establish whether priming between Dutch and Papiamento was possible. In future research, interactions of priming with more detailed sociolinguistic background information and information about the participants’ daily language usage, in short with their multilingual linguistic biographies, could lead to a more detailed view on the influence of cross-linguistic priming in combination with speaker variables. The age effect that we found already gives some interesting indications, but more detailed background information would make the picture more complete.

To conclude, we found that syntactic preferences in dative sentences are different between speakers of Papiamento in the Netherlands compared to speakers of Papiamento in Aruba, which may well be a sign of contact-induced language change in progress in the population in the Netherlands. Based on subsequent cross-linguistic priming experiments, we suggest that these changes are likely caused by cross-linguistic priming from Dutch to Papiamento. Our conclusions on contact-induced language change are further strengthened by the finding that syntactic choices were more Dutch-like in younger speakers in the Netherlands than in older speakers in the Netherlands - a finding that we did not observe in Aruba. Thus, it is evident that “languages never exist in an ecological vacuum” (Muysken, 2010); there are multiple factors (e.g., speaker-specific factors; priming from previous discourse) influencing cross-language interactions in bilinguals, which can lead to language variation and language change. Cross-language structural priming can help us to understand the ongoing processes of contact-induced language change and can thus result in a possible bridge (both theoretical and methodological) between psycholinguistics, sociolinguistics, and general linguistics.
Appendix A

List of all critical target movie clips in the baseline task (Experiment 1)

1 man giving a backpack to another man
2 man giving a balloon to a woman
3 man giving a basket to a girl
4 man giving a bell to a boy
5 man giving a donut to another man
6 man giving a hotdog to a girl
7 man giving a pan to a woman
8 man giving a teapot to a boy
9 man giving a bear to a girl
10 man giving a belt to another man
11 man giving a pair of boots to a woman
12 man giving a flask to a woman
13 man giving an ice-cream to a boy
14 man giving a milkshake to another man
15 man giving a popsicle to a boy
16 man giving a pair of shoes to a girl
17 man showing a bag to a girl
18 man showing a bear to a boy
19 man showing a cake to another man
20 man showing cornflakes to a woman
21 man showing cookies to a woman
22 man showing a hat to a girl
23 man showing a saucer to a boy
24 man showing a bottle of wine to another man
25 man showing a bike to a girl
26 man showing a book to another man
27 man showing a box to a boy
28 man showing a cake to a woman
29 man showing a jacket to a boy
30 man showing a purse to a girl
31 man showing a teapot to a woman
32 man showing a vase to a man
## Appendix B

**List of all critical prime sentences and target movie clips in the priming task (Experiment 2)**

<table>
<thead>
<tr>
<th>Primed Structure</th>
<th>Verb repeated prime and target</th>
<th>Auditory prime sentence</th>
<th>Translation</th>
<th>Target movie clip</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO yes</td>
<td>de vrouw geeft het meisje het boek</td>
<td>the woman gives the girl the book</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO no</td>
<td>de vrouw toont het meisje het boek</td>
<td>the woman shows the girl the book</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td>de vrouw geeft het boek aan het meisje</td>
<td>the woman gives the book to the girl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td>de vrouw toont het boek aan het meisje</td>
<td>the woman shows the book to the girl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO yes</td>
<td>de jongen geeft de man de pen</td>
<td>the boy gives the man the pen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO no</td>
<td>de jongen toont de man de pen</td>
<td>the boy shows the man the pen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td>de jongen geeft de pen aan de man</td>
<td>the boy gives the pen to the man</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td>de jongen toont de pen aan de man</td>
<td>the boy shows the pen to the man</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primed Structure</td>
<td>Verb repeated prime and target</td>
<td>Auditory prime sentence</td>
<td>Translation</td>
<td>Target movie clip</td>
</tr>
<tr>
<td>------------------</td>
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<td>-------------</td>
<td>------------------</td>
</tr>
<tr>
<td><strong>DO</strong> yes</td>
<td>het meisje geeft de man de lamp</td>
<td>the girl gives the man the lamp</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong> no</td>
<td>het meisje toont de man de lamp</td>
<td>the girl shows the man the lamp</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> yes</td>
<td>het meisje geeft de lamp aan de man</td>
<td>the girl gives the lamp to the man</td>
<td>man giving a basket to a girl</td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> no</td>
<td>het meisje toont de lamp aan de man</td>
<td>the girl shows the lamp to the man</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong> yes</td>
<td>de vrouw geeft het meisje de telefoon</td>
<td>the woman gives the girl the telephone</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong> no</td>
<td>de vrouw toont het meisje de telefoon</td>
<td>the woman shows the girl the telephone</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> yes</td>
<td>de vrouw geeft de telefoon aan het meisje</td>
<td>the woman gives the telephone to the girl</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> no</td>
<td>de vrouw toont de telefoon aan het meisje</td>
<td>the woman shows the telephone to the girl</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong> yes</td>
<td>de jongen geeft de vrouw de tas</td>
<td>the boy gives the woman the bag</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong> no</td>
<td>de jongen toont de vrouw de tas</td>
<td>the boy shows the woman the bag</td>
<td>man giving a donut to another man</td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> yes</td>
<td>de jongen geeft de tas aan de vrouw</td>
<td>the boy gives the bag to the woman</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> no</td>
<td>de jongen toont de tas aan de vrouw</td>
<td>the boy shows the bag to the woman</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primed Structure</td>
<td>Verb repeated prime and target</td>
<td>Auditory prime sentence</td>
<td>Translation</td>
<td>Target movie clip</td>
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</tr>
<tr>
<td>DO  yes</td>
<td>het meisje geeft de jongen de sokken</td>
<td>the girl gives the boy the socks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO  no</td>
<td>het meisje toont de jongen de sokken</td>
<td>the girl shows the boy the socks</td>
<td>man giving a hotdog to a girl</td>
<td></td>
</tr>
<tr>
<td>PO  yes</td>
<td>het meisje geeft de sokken aan de jongen</td>
<td>the girl gives the socks to the boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO  no</td>
<td>het meisje toont de sokken aan de jongen</td>
<td>the girl shows the socks to the boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO  yes</td>
<td>de vrouw geeft de man de broek</td>
<td>the woman gives the man the trousers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO  no</td>
<td>de vrouw toont de man de broek</td>
<td>the woman shows the man the trousers</td>
<td>man giving a pan to a woman</td>
<td></td>
</tr>
<tr>
<td>PO  yes</td>
<td>de vrouw geeft de broek aan de man</td>
<td>the woman gives the trousers to the man</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO  no</td>
<td>de vrouw toont de broek aan de man</td>
<td>the woman shows the trousers to the man</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primed Structure</td>
<td>Verb repeated prime and target</td>
<td>Auditory prime sentence</td>
<td>Translation</td>
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</tr>
<tr>
<td><strong>DO</strong> yes</td>
<td>de jongen geeft het meisje de rok</td>
<td>the boy gives the girl the skirt</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>de jongen toont het meisje de rok</td>
<td>the boy shows the girl</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong> no</td>
<td>de jongen geeft het meisje de rok</td>
<td>the boy gives the skirt to the girl</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>de jongen toont het meisje de rok aan het meisje</td>
<td>the boy shows the skirt to the girl</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> yes</td>
<td>het meisje geeft de vrouw de jurk</td>
<td>the girl gives the woman the dress</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>het meisje toont de vrouw de jurk</td>
<td>the girl shows the woman the dress</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> no</td>
<td>het meisje geeft de jurk aan de vrouw</td>
<td>the girl gives the dress to the woman</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>de vrouw geeft de jurk aan de vrouw</td>
<td>the woman gives the dress to the woman</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong> yes</td>
<td>de vrouw geeft de jongen de bril</td>
<td>the woman gives the boy the glasses</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>de vrouw toont de jongen de bril</td>
<td>the woman gives the glasses to the boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong> no</td>
<td>de vrouw geeft de bril aan de jongen</td>
<td>the woman gives the glasses to the boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>de vrouw toont de bril aan de jongen</td>
<td>the woman shows the glasses to the boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> yes</td>
<td>de vrouw geeft de bril aan de jongen</td>
<td>the woman gives the glasses to the boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>de vrouw toont de bril aan de jongen</td>
<td>the woman shows the glasses to the boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> no</td>
<td>de vrouw geeft de bril aan de jongen</td>
<td>the woman gives the glasses to the boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>de vrouw toont de bril aan de jongen</td>
<td>the woman shows the glasses to the boy</td>
<td></td>
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<tr>
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</tr>
<tr>
<td>DO yes</td>
<td>de jongen geeft het meisje de ring</td>
<td>the boy gives the girl the ring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO no</td>
<td>de jongen toont het meisje de ring</td>
<td>the boy shows the girl the ring man giving a pair of boots to a woman</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td>de jongen geeft de ring aan het meisje</td>
<td>the boy gives the ring to the girl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td>de jongen toont de ring aan het meisje</td>
<td>the boy shows the ring to the girl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO yes</td>
<td>het meisje geeft de jongen de lepel</td>
<td>the girl gives the boy the spoon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO no</td>
<td>het meisje toont de jongen de lepel</td>
<td>the girl shows the boy the spoon man giving a flask to a woman</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td>het meisje geeft de lepel aan de jongen</td>
<td>the girl gives the spoon to the boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td>het meisje toont de lepel aan de jongen</td>
<td>the girl shows the spoon to the boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primed Structure</td>
<td>Verb repeated prime and target</td>
<td>Auditory prime sentence</td>
<td>Translation</td>
<td>Target movie clip</td>
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</tr>
<tr>
<td>DO yes</td>
<td>de vrouw geeft de man de vork</td>
<td>the woman gives the man the fork</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO no</td>
<td>de vrouw toont de man de vork</td>
<td>the woman shows the man</td>
<td>man giving an ice-cream to a boy</td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td>de vrouw geeft de vork aan de man</td>
<td>the woman gives the fork to the man</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td>de vrouw toont de vork aan de man</td>
<td>the woman shows the fork to the man</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO yes</td>
<td>de jongen geeft de vrouw de gitaar</td>
<td>the boy gives the woman the guitar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO no</td>
<td>de jongen toont de vrouw de gitaar</td>
<td>the boy shows the woman the guitar</td>
<td>man giving a milkshake to another man</td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td>de jongen geeft de gitaar aan de vrouw</td>
<td>the boy gives the guitar to the woman</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td>de jongen toont de gitaar aan de vrouw</td>
<td>the boy shows the guitar to the woman</td>
<td></td>
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</tr>
<tr>
<td>Primed Structure</td>
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<td>Translation</td>
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<td>------------------</td>
</tr>
<tr>
<td>DO yes</td>
<td>het meisje geeft de vrouw de trompet</td>
<td>the girl gives the woman the trumpet</td>
<td>man giving a popsicle to a boy</td>
<td></td>
</tr>
<tr>
<td>DO no</td>
<td>het meisje geeft de woman the trumpet to the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td>de vrouw toont het meisje de trompet aan</td>
<td>the girl shows the woman the trumpet to the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td>de vrouw toont het de woman the trumpet to the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO yes</td>
<td>de vrouw geeft de jongen de plant</td>
<td>the woman gives the boy the plant</td>
<td>man giving a pair of shoes to a girl</td>
<td></td>
</tr>
<tr>
<td>DO no</td>
<td>de vrouw toont de jongen de plant</td>
<td>the woman shows the boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td>de vrouw geeft de plant aan de jongen</td>
<td>the woman gives the plant to the boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td>de vrouw toont de plant aan de jongen</td>
<td>the woman shows the plant to the boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primed Structure</td>
<td>Verb repeated prime and target</td>
<td>Auditory prime sentence</td>
<td>Translation</td>
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</tr>
<tr>
<td>------------------</td>
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<td>-------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>DO yes</td>
<td>de jongen toont de vrouw de bloem</td>
<td>the boy shows the woman the flower</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO no</td>
<td>de jongen geeft de vrouw de bloem</td>
<td>the boy gives the woman the flower</td>
<td>man showing a bag to a girl</td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td>de jongen toont de bloem aan de vrouw</td>
<td>the boy shows the flower to the woman</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td>de jongen geeft de bloem aan de vrouw</td>
<td>the boy gives the flower to the woman</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO yes</td>
<td>het meisje toont de man de krant</td>
<td>the girl shows the man the newspaper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO no</td>
<td>het meisje geeft de man de krant</td>
<td>the girl gives the man the newspaper</td>
<td>man showing a bear to a boy</td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td>het meisje toont de krant aan de man</td>
<td>the girl shows the newspaper to the man</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td>het meisje geeft de krant aan de man</td>
<td>the girl gives the newspaper to the man</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primed Structure</td>
<td>Verb repeated prime and target</td>
<td>Auditory prime sentence</td>
<td>Translation</td>
<td>Target movie clip</td>
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<td>--------------------</td>
</tr>
<tr>
<td>DO yes</td>
<td><em>de vrouw toont</em> <em>de jongen de bal</em></td>
<td>the woman shows the boy the ball</td>
<td>man showing a cake to another man</td>
<td></td>
</tr>
<tr>
<td>DO no</td>
<td><em>de vrouw geeft</em> <em>de jongen de bal</em></td>
<td>the boy the ball the woman shows the ball to the boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td><em>de vrouw geeft</em> <em>de bal aan de jongen</em></td>
<td>the boy the woman gives the ball to the boy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO yes</td>
<td><em>de jongen toont</em> <em>het meisje de jas</em></td>
<td>the boy shows the girl the coat</td>
<td>man showing cornflakes to a woman</td>
<td></td>
</tr>
<tr>
<td>DO no</td>
<td><em>het meisje geeft</em> <em>de jas aan het meisje</em></td>
<td>the girl gives the coat to the girl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td></td>
<td>the boy gives the coat to the girl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO yes</td>
<td><em>het meisje toont</em> <em>de man de hamer</em></td>
<td>the girl shows the man the hammer</td>
<td>man showing cookies to a woman</td>
<td></td>
</tr>
<tr>
<td>DO no</td>
<td><em>het meisje geeft</em> <em>de man de hamer</em></td>
<td>the girl gives the man the hammer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td><em>het meisje geeft</em> <em>de hamer aan de man</em></td>
<td>the girl gives the hammer to the man</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primed Structure</td>
<td>Verb repeated prime and target</td>
<td>Auditory prime sentence</td>
<td>Translation</td>
<td>Target movie clip</td>
</tr>
<tr>
<td>------------------</td>
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</tr>
<tr>
<td><strong>DO</strong> yes</td>
<td><em>de vrouw toont</em> <em>de jongen de zaag</em></td>
<td>the woman shows the boy the saw</td>
<td>man showing a hat to a girl</td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong> no</td>
<td><em>de vrouw geeft</em> <em>de jongen de zaag</em></td>
<td>the woman gives the boy the saw</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> yes</td>
<td><em>de vrouw toont</em> <em>de zaag aan de jongen</em></td>
<td>the woman shows the saw to the boy</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> no</td>
<td><em>de vrouw geeft</em> <em>de zaag aan de jongen</em></td>
<td>the woman gives the saw to the boy</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong> yes</td>
<td><em>de jongen toont</em> <em>het meisje de sleutel</em></td>
<td>the boy shows the girl the key</td>
<td>man showing a saucer to a boy</td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong> no</td>
<td><em>de jongen geeft</em> <em>het meisje de sleutel</em></td>
<td>the boy gives the girl the key</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> yes</td>
<td><em>de jongen toont</em> <em>de sleutel aan het meisje</em></td>
<td>the boy shows the key to the girl</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> no</td>
<td><em>de jongen geeft</em> <em>de sleutel aan het meisje</em></td>
<td>the boy gives the key to the girl</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Primed Structure</td>
<td>Verb repeated prime and target</td>
<td>Auditory prime sentence</td>
<td>Translation</td>
<td>Target movie clip</td>
</tr>
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<td>------------------</td>
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<td>------------------</td>
</tr>
<tr>
<td><strong>DO</strong> yes</td>
<td><em>het meisje toont de vrouw het geld</em></td>
<td>the girl shows the woman the money</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong> no</td>
<td><em>het meisje geeft de vrouw het geld</em></td>
<td>the girl gives the woman the money</td>
<td></td>
<td>man showing a bottle of wine to another man</td>
</tr>
<tr>
<td><strong>PO</strong> yes</td>
<td><em>het meisje geeft het geld aan de vrouw</em></td>
<td>the girl gives the woman the money to the woman</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> no</td>
<td><em>het meisje toont het geld aan de vrouw</em></td>
<td>the girl shows the money to the woman</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong> yes</td>
<td><em>de vrouw toont de man de fles</em></td>
<td>the woman shows the man the bottle</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong> no</td>
<td><em>de vrouw geeft de man de fles</em></td>
<td>the woman gives the man the bottle</td>
<td></td>
<td>man showing a bike to a girl</td>
</tr>
<tr>
<td><strong>PO</strong> yes</td>
<td><em>de vrouw geeft de fles aan de man</em></td>
<td>the woman gives the bottle to the man</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> no</td>
<td><em>de vrouw toont de fles aan de man</em></td>
<td>the woman shows the bottle to the man</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primed Structure</td>
<td>Verb repeated prime and target</td>
<td>Auditory prime sentence</td>
<td>Translation</td>
<td>Target movie clip</td>
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</tr>
<tr>
<td></td>
<td></td>
<td><em>de jongen toont</em></td>
<td>the boy shows</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>het meisje de appel</em></td>
<td>the girl the apple</td>
<td></td>
</tr>
<tr>
<td>DO yes</td>
<td></td>
<td><em>de jongen geeft</em></td>
<td>the boy gives the</td>
<td>man showing a book to another man</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>het meisje de appel</em></td>
<td>girl the apple</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>de jongen toont</em></td>
<td>the boy shows</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>de appel aan het</em></td>
<td>the apple to the</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>meisje</em></td>
<td>girl</td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td></td>
<td><em>de jongen geeft</em></td>
<td>the boy gives the</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>de appel aan het</em></td>
<td>apple to the girl</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>meisje</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td></td>
<td><em>het meisje toont</em></td>
<td>the girl shows</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>de vrouw de banaan</em></td>
<td>the woman the banana</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>het meisje geeft</em></td>
<td>the girl gives the woman the banana</td>
<td></td>
</tr>
<tr>
<td>DO yes</td>
<td></td>
<td><em>de vrouw de banaan</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>het meisje toont</em></td>
<td>the girl shows</td>
<td>man showing a box to a boy</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>de banaan aan</em></td>
<td>the banana to the woman</td>
<td></td>
</tr>
<tr>
<td>DO no</td>
<td></td>
<td><em>het meisje geeft</em></td>
<td>the girl gives the banana to the woman</td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td></td>
<td><em>de vrouw</em></td>
<td>the woman</td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td></td>
<td><em>het meisje geeft</em></td>
<td>the girl gives the banana to the woman</td>
<td></td>
</tr>
<tr>
<td>Primed Structure</td>
<td>Verb repeated prime and target</td>
<td>Auditory prime sentence</td>
<td>Translation</td>
<td>Target movie clip</td>
</tr>
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</tr>
<tr>
<td><strong>DO</strong></td>
<td>yes</td>
<td><em>de vrouw toont</em> de jongen de meloen</td>
<td>the woman shows the boy</td>
<td>man showing a cake to a woman</td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>de vrouw geeft</em> de jongen de meloen</td>
<td>the woman the boy</td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong></td>
<td>no</td>
<td><em>de vrouw toont</em> de meloen</td>
<td>melon shows the melon</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>de vrouw geeft</em> de meloen aan</td>
<td>the woman the melon to the boy</td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong></td>
<td>yes</td>
<td><em>de jongen</em> de meloen</td>
<td>man showing a jacket to a boy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>de vrouw geeft</em> de meloen aan</td>
<td>the woman the coconut to the man</td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong></td>
<td>no</td>
<td><em>de jongen toont</em> de man de kokosnoot</td>
<td>the boy shows the man the coconut</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>de jongen geeft</em> de man de kokosnoot</td>
<td>the boy gives the man the coconut</td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong></td>
<td>yes</td>
<td><em>de jongen geeft</em> de kokosnoot aan de man</td>
<td>the boy gives the man the coconut</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>de man</em> de kokosnoot aan de man</td>
<td>the man gives the man the coconut</td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong></td>
<td>no</td>
<td><em>de jongen toont</em> de man</td>
<td>the boy shows the man</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>de jongen geeft</em> de man</td>
<td>the boy gives the man</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>de man</em> de man</td>
<td>man</td>
<td></td>
</tr>
<tr>
<td>Primed Structure</td>
<td>Verb repeated prime and target</td>
<td>Auditory prime sentence</td>
<td>Translation</td>
<td>Target movie clip</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------</td>
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<td>-----------------</td>
</tr>
<tr>
<td><strong>DO</strong> yes</td>
<td><em>het meisje toont</em></td>
<td><em>de jongen het mes</em></td>
<td>the girl shows the boy the knife</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>het meisje geeft</em></td>
<td><em>de jongen het mes</em></td>
<td>the girl gives the boy the knife</td>
<td>man showing a purse to a girl</td>
</tr>
<tr>
<td><strong>DO</strong> no</td>
<td><em>het meisje toont</em></td>
<td><em>het mes aan de jongen</em></td>
<td>the girl shows the knife to the boy</td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> yes</td>
<td><em>het meisje geeft</em></td>
<td><em>het mes aan de jongen</em></td>
<td>the girl gives the knife to the boy</td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> no</td>
<td><em>de vrouw toont</em></td>
<td><em>de meisje de fluit</em></td>
<td>the woman shows the girl the whistle</td>
<td>man showing a teapot to a woman</td>
</tr>
<tr>
<td><strong>DO</strong> yes</td>
<td><em>de vrouw geeft</em></td>
<td><em>het meijsje de fluit</em></td>
<td>the woman gives the girl the whistle</td>
<td></td>
</tr>
<tr>
<td><strong>DO</strong> no</td>
<td><em>de vrouw toont</em></td>
<td><em>de fluit aan het meijsje</em></td>
<td>the woman shows the whistle to the girl</td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> yes</td>
<td><em>de vrouw geeft</em></td>
<td><em>de fluit aan het meijsje</em></td>
<td>the woman gives the whistle to the girl</td>
<td></td>
</tr>
<tr>
<td><strong>PO</strong> no</td>
<td><em>de vrouw toont</em></td>
<td><em>de meijsje</em></td>
<td>the woman shows the whistle to the girl</td>
<td></td>
</tr>
<tr>
<td>Primed Structure</td>
<td>Verb repeated prime and target</td>
<td>Auditory prime sentence</td>
<td>Translation</td>
<td>Target movie clip</td>
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<td>------------------</td>
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<td>-------------------</td>
</tr>
<tr>
<td>DO yes</td>
<td>de jongen toont de vrouw de pan</td>
<td>the boy shows the woman the pan</td>
<td>DO yes</td>
<td>man showing a vase to a man</td>
</tr>
<tr>
<td>DO no</td>
<td>de vrouw de pan de jongen toont de pan aan de vrouw</td>
<td>woman the pan the boy shows the pan to the woman</td>
<td>DO no</td>
<td></td>
</tr>
<tr>
<td>PO yes</td>
<td>de jongen geeft de pan aan de vrouw</td>
<td>the boy gives the pan to the woman</td>
<td>PO yes</td>
<td></td>
</tr>
<tr>
<td>PO no</td>
<td>de pan aan de vrouw</td>
<td>the boy gives the pan to the woman</td>
<td>PO no</td>
<td></td>
</tr>
</tbody>
</table>

*Note:* The target movie clips in Experiment 2 are exactly the same as the target movie clips in Experiment 1.
Summary and discussions

In this chapter I will summarize the starting point and the main findings of my study, and review the results of the four individual studies with respect to the goals that motivated them, and discuss the implications of the dissertation. Specifically, I will interpret these results in the light of the theoretical models brought up in the introduction. I conclude this chapter with suggestions for further research.

6.1 Summary of the research questions

This dissertation is a collection of four studies I have carried out together with different sets of colleagues, using a range of methods, to investigate various aspects of contact-induced language change in the language use of Dutch-Turkish and Dutch-Papiamento bilingual speakers. In my dissertation, I have tried to explore the mechanisms of language change in these contact situations. The first three chapters reported on Turkish as spoken in the Netherlands and in Turkey, and the fourth one on Papiamento as spoken in the Netherlands and in Aruba.

My aim was to compare the outcomes of contact-induced language change in different multilingual settings. Multilingualism and contact-induced language change have been analyzed from a number of different perspectives (see Grosjean, 2008; Jarvis & Pavlenko, 2007; Romaine, 1989). Historical linguistics is concerned with language development over time, while structural linguistics, including generative linguistics, is concerned with synchronic rather than diachronic aspects of language. Sociolinguistics is concerned with the relationship between a language and its social circumstances. Compatible with sociolinguistics is the relatively new usage-based model of language, also known as cognitive linguistics. Usage-based models are concerned with the actual use of the linguistic system and its impact on the speaker’s linguistic knowledge (Langacker, 1987: 494). In usage-based linguistics the assumption is that there is a link between the frequency of an element and its entrenchment (Backus, 2005, 2010, 2013, 2014; Croft, 2001; Langacker, 1987; Tomasello, 2003), and this idea has also informed my studies.

Finally, psycholinguistic studies are concerned with the individual language processing of a speaker (Levelt, 2013). Multilingualism has become more and more important in our modern world, and has been shown to have large cognitive benefits (Green, 2011). Lab-based experiments have shown that the languages of a bilingual speaker are interactive and can influence each other during processing (Hernandez, Li & MacWhinney, 2005). This can ultimately lead to language convergence, which
is often found to be the grammatical outcome of language contact in multilingual settings.

Though different disciplines offer different accounts of what language contact is, according to Muysken (1984), the domains of language contact are tightly connected with the three research traditions of linguistics, sociology and psychology. Language contact phenomena as exhibited in the speech of individual speakers are not only interesting as a starting point for theories regarding the cognitive basis of language in general and multilingualism in particular (i.e. psychology), they also provide evidence for how people behave in multicultural situations (sociology) and offer basic data about how languages change (linguistics).

In more recent work, Muysken (2013) has proposed a quadrangle model for the explanation of language-contact phenomena across different domains and the interaction of languages in bilingual individuals. In this framework, the following four “Bilingual Optimization Strategies” (the four poles of the model) are described:

a. An L1-type speaker will maximize the structural coherence of her first language,
b. An L2-type speaker will maximize the structural coherence of her second language,
c. An L1/L2-type speaker will match between L1 and L2 patterns where possible,
d. A UP-type speaker will rely on universal principles of language processing.

These “Bilingual Optimization Strategies” are visible in the choices that bilingual speakers make, individually and collectively, in everyday language use. They may make use of all four strategies within any single utterance, and the choices are influenced by a number of social, individual, and linguistic factors.

The aim of my study was to investigate language contact in individual speakers by means of a combination of sociolinguistic corpus-based analysis and psycholinguistic experimental techniques. This provides a link between sociolinguistic research on how contact and change unfold and psycholinguistic research on the cognitive mechanisms that underlie this. Combining corpus results with experimental validation is relatively new, at least for contact linguistics. It is gaining the status of a methodological standard in Cognitive Linguistics.

In the next section I summarize the empirical results of this dissertation. Its theoretical implications will be discussed in Section 6.3.
6.2 Summary of the main findings

Chapter 2 reports on a study on the production of Turkish and Dutch topological adpositions, in particular the use of locative constructions by Turkish-Dutch bilingual speakers. Numerous researchers have studied the domain of space. Our study was inspired by Melissa Bowerman’s work in particular, because the method she developed has proven very successful for studying adposition usage, and has been widely used as a standardized elicitation tool (Bowerman, 1996). We used the elicitation techniques and stimulus materials found in Bowerman & Pederson (1992). Our main results were the following: first, there is a difference between Turkey-Turkish and Dutch-Turkish adposition use. Second, there are differences between the two bilingual groups, but this was mainly observed for their Turkish (rather than their Dutch). Third, Dutch-dominant bilinguals enhanced the congruence between translation-equivalent Turkish and Dutch adpositions, increasing the use of postpositions that are transparently the translations of much-used Dutch prepositions. Finally, Turkish-dominant bilinguals extended the use of a topologically neutral locative marker. The two groups of Turkish-Dutch bilinguals used bilingual optimization strategies (Muysken, 2013) differently: while Dutch-dominant bilinguals relied on their Dutch (L2 optimization) Turkish dominant bilinguals relied more on their universal linguistic knowledge (UP optimization). Our results also support the idea that contact-induced changes may result in a reduction of the processing load for bilingual speakers (Matras, 2009). The use of the neutral marker makes it unnecessary to select the correct specific marker, and the use of the translation-equivalents makes the Turkish conceptual system more similar to the Dutch one. This reduces the number of conceptual distinctions the bilingual speakers have to keep in mind.

Chapter 3 reports on a study of contact-induced grammatical change in the Turkish case marking system in the Netherlands. Using data from the Turkish Spoken Corpus (Backus, 2005, 2010; Doğruoz & Backus, 2007), this study focused especially on changes in the usage of the accusative and the dative. Again, we found differences between monolingual and bilingual speakers of Turkish. Also, as in the first study, the two bilingual groups behaved differently. Contact with Dutch causes some changes in the Turkish case marking system, but these are unsystematic at this point, and have not progressed very far yet. The results of the case marking data are comparable to those of the word order study by Doğruoz & Backus (2007). There are isolated examples of unconventionality in case marking but there is no systematic change. This may be typical of the early stages of change. In this study, as in the first one, the two groups of Turkish/Dutch bilinguals used bilingual optimization strategies differently, in line with the predictions from Muysken (2013).
Chapter 4 reports on an experimental study on the entrenchment and acceptance of unconventional usage by bilingual speakers in the Netherlands. Three groups of speakers were asked to provide judgments on various kinds of stimulus sentences. Some of these contained contact-induced features identified in our earlier corpus research. We again found differences between the speaker groups, the results indicating that innovative language use was accepted more often by the Dutch-dominant bilinguals than by the other two participant groups. This is in line with the argument that innovative language use of Dutch-Turkish bilinguals in the Netherlands is based on cross-language interactions between Dutch and Turkish, and that this innovative language use paves the way for contact-induced language change. Syntactic constructions with unconventional features, for example deviant case marking, were rated lower than their conventional counterparts by all groups, although the Dutch-dominant bilinguals were more tolerant of them. Presumably this reflects their occasional use of these constructions, lending support to the usage-based approach and its suggestion that there is a link between usage and mental storage. Interestingly, Turkish-dominant bilinguals were sometimes more negative about unconventional stimulus items than the Turkish monolingual control group.

Finally, Chapter 5 reports on Dutch and Papiamento dative alternation. In this study the role of cross-linguistic structural priming from Dutch to Papiamento was investigated with respect to the production of dative constructions. Bilingual speakers on Aruba were compared to speakers in the Netherlands. Dutch has two dative constructions, while traditionally Papiamento only uses one of these; the other one being possible but used marginally. We found that syntactic preferences in dative sentences are different between the speaker groups, which could be a sign of contact-induced language change in progress. Based on subsequent cross-linguistic priming experiments, we suggested that these changes are likely caused by cross-linguistic priming from Dutch to Papiamento. We also found that the syntactic choices were more Dutch-like in the data of the younger bilingual speakers in the Netherlands than in those of the older ones (supporting Vedder & Kook, 2001). Younger speakers make less use of Papiamento than older speakers, and for that reason their syntactic preferences in the dative construction may be less stable and robust. Furthermore, the priming findings between Dutch and Papiamento provide a link between the psycholinguistic aspects of bilingual language processing (change is driven by the desire to lower cognitive effort) and outcomes of contact-induced language change observable in speech.

To summarize, the study’s main findings are the following:

- While there are indications of language change in some subsystems of the language, not everything changes: there are many structures that are stable.
- In their Turkish, Dutch-dominant bilinguals prefer structures shared with Dutch, while Turkish-dominant bilinguals prefer more general structures in
those cases in which their language is not identical to that of Turkish monolinguals.

- Dutch-dominant bilinguals show some unconventional case marking, but not much.
- In judgment tasks, Dutch-dominant bilinguals rate some unconventional structures positively, especially unconventional (and Dutch-inspired) collocations.
- Turkish-dominant bilinguals are sometimes stronger in their rejection of unconventional structures than Turkish monolinguals.
- Papiamento speakers with more exposure to Dutch undergo more priming in their Papiamento from a Dutch syntactic structure that has an equivalent in Papiamento which is possible but rare.
- In general, the evidence from corpus analyses and experimental measures converges

The results of these four studies thus confirm that there are differences between speaker groups, depending on their use of and proficiency in their two languages. We found traces of Dutch impact on Turkish and on Papiamento, which indicate contact-induced language change in Dutch Turkish and in Dutch Papiamento. This finding was robust and independent of the method used. The theoretical and methodological implications of these findings for contact linguistics are discussed in the final section.

6.3 Theoretical and methodological implications

This section will deal with five issues about which the findings of this study allow us to say something more.

Characterizing the changes

A first question is whether the development we see from Turkish monolinguals to Dutch-dominant bilinguals, with Turkish-dominant bilinguals in between, is really the reflection of a linear process in which speakers undergo increasing amounts of contact-induced change as their balance between the two languages shifts in the direction of Dutch. There certainly is enough evidence to assume this is partly true: there is much more unconventionality in the Turkish of Dutch-dominant bilinguals (and the Papiamento data point in the same direction). However, the findings regarding the Turkish-dominant bilinguals complicate the issue. In the study on locative expressions (Chapter 2), Turkish-dominant bilinguals differed from Turkish monolinguals in a way that was qualitatively different from how Dutch-dominant bilinguals differed from monolinguals. While the latter showed some signs of clear
Dutch influence, for example modeling the use of üst ‘on top of’ on that of its Dutch translation equivalent op, the former group overused the semantically much more neutral locative case marker. Our interpretation was that the Dutch-dominant bilinguals underwent straight interference from Dutch (optimizing L2 in Muysken’s 2013 framework) while the Turkish-dominant bilinguals used a neutral option (optimizing universal principles, in Muysken, 2013) when they were not sure what the conventional expression was. The uncertainty is contact-induced, but not the actual form produced. This could also be related to Matras’ (2009) suggestion that bilinguals attempt to reduce the cognitive processing load that comes with having to balance the syntactic structures of two languages. Simply using the locative case marker with its more general semantics, and therefore applicable in many of the cases where monolinguals would prefer a more specific postposition, is one way of achieving this reduction.

While all four studies found traces of contact, these differ in their degree of entrenchment. Table 1 presents the degree of entrenchment of the various linguistic features that were investigated, tentatively assigned a position on a change continuum. They include an established change, an ongoing change, an incipient change or just momentary interference with no sign of permanence yet. For example, the findings of the likeability study show that some new fixed expressions/collocations such as piano oynamak (playing the piano) are widely accepted by Dutch-Turkish bilingual speakers, and therefore seem to reflect an established change. Changes in dative usage, outlined in Chapter 5, also reflect an already established change.

**Table 1**: Entrenchment of linguistic features undergoing different stages of language change.

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Incipient change</th>
<th>Ongoing change</th>
<th>Established change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 2 Locative study</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Chapter 3 Accusative study</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Chapter 4 Acceptability study</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Chapter 5 Priming study</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

The model of Muysken (2013) may be helpful in understanding some of the specific findings. Since this study has focused on the Turkish and Papiamentu of our
participants, rather than on their Dutch, effects that result from optimizing L1 have only been shown in the form of aspects of Turkish and Papiamentu that were not affected by Dutch. Optimizing L1 is also seen when interference or transfer affects L2 production. Though this was not focused on in the studies reported on above, my data do contain numerous relevant examples. L1 optimization can, for example, explain gender marking in their Dutch of our Turkish and Papiamento speaker participants. Turkish nouns are not gender specific, whereas in Dutch, the usage of articles is specified by the gender of the noun. When TDB speakers use articles in Dutch, they are prone to not make this gender distinction (see also Cornips, 2008). However, to shed more light on this, we should explore variation between speakers, and see whether they make more gender errors the more Turkish-dominant they are.

Generalized use of one article (i.e. without the gender distinction) can also be explained through Matras’ (2009) claim that contact-induced language changes occur due to the need for processing efficiency. Bilinguals have two different linguistic systems to work with. Acquiring the proper usage of the two Dutch definite articles can be a hassle if the distinction, or the use of any article, is not part of your L1. To reduce this time consuming endeavor, bilinguals may choose to consistently use only one article instead of figuring out which of the two possible definite articles in Dutch (de or het) is the correct one. In terms of Muysken’s model, the speakers would be relying on ‘optimalizing L1’.

Tables 2 and 3 compare the results in terms of the framework proposed in Muysken (2013). This is a provisional analysis, as the discussion above indicated that it is not always easy to show what strategy has been used, and often several strategies work together. It is clear that most of the results seem best interpreted in terms of either L1 or L2 optimalization. There is only one clear use of universal strategies, and convergence-type results (L1/L2) emerge only in two out of four studies. This is surprising given the importance generally attributed to this mechanism (Matras, 2009; Matras & Sakel, 2007).

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13 The elicited data on Dutch gender use (Chapter 2 and 5) are not included in the thesis.
Table 2: Bilingual Optimization Strategies; Turkish studies.

<table>
<thead>
<tr>
<th></th>
<th>L1-type</th>
<th>L2-type</th>
<th>L1/L2-type</th>
<th>UP-type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DDB</td>
<td>TDB</td>
<td>DDB</td>
<td>TDB</td>
</tr>
<tr>
<td>Chapter 2 Locative study</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Chapter 3 Accusative study</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Chapter 4 Acceptability study</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Dutch dominant Turkish/Dutch bilingual speakers (DDB), Turkish dominant Turkish/Dutch bilingual speakers (TDB)

Table 3: Bilingual Optimization Strategies; Papiamento study.

<table>
<thead>
<tr>
<th></th>
<th>L1-type</th>
<th>L2-type</th>
<th>L1/L2-type</th>
<th>UP-type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DDB</td>
<td>PDB</td>
<td>DDB</td>
<td>PDB</td>
</tr>
<tr>
<td>Chapter 5 DO-PO Priming study</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Dutch dominant Papiamento/Dutch bilingual speakers (DDB) and Papiamento dominant Papiamento/Dutch bilingual speakers (TDB)

One might wonder whether these explanations are really different. In my opinion, Matras’ emphasis on the need to create a single system so that the processing load is reduced leads to the four strategies that Muysken’s model describes. The models are therefore complementary. My results show, for instance, that bilinguals tend to avoid complex linguistic constructions. They might well do this in order to reduce the processing load, but the result might be accurately portrayed as involving ‘Optimalizing L2’ if what is actually produced is a more simple construction that has been borrowed from L2. Moreover, one might wonder whether bilinguals really strive to ‘reduce’ processing load. Perhaps it is more accurate to say that they avoid an increase of processing load, and therefore aim to keep the processing load simple.
Predicting change

The second question to be addressed is: what changes? As in most cases of minority languages, it is clear from the data that Turkish is undergoing contact-induced changes in the Netherlands, but it is also clear that the language being spoken is recognizably Turkish. There is much that stays the same: much of what the bilinguals produce is ‘correct’ and conventional Turkish. This raises the question whether there are patterns to discover about what changes and what does not in a contact situation, and what factors determine whether or not a particular aspect of the language is going to undergo change or not. Why are some things apparently ‘attractive’ (Johanson, 2002b). One explanation that has been suggested is that contact effects go from ‘big’ to ‘small’. Discourse structure is affected more than phrasal structure. Indeed, we saw that Turkish case marking and verbal inflection are relatively well maintained, while Onar Valk & Backus (2013) show that this does not hold for Turkish subordination. However, this cannot be the whole story, since lexical influence should also be considered ‘small’, as it concerns only words. Yet, lexical influence is probably the most prominent type of contact-induced change. There are many Dutch words in everyday Turkish conversation, and collocations that are the result of loan translation were by far the most accepted types of unconventional structure in the judgment task reported on in Chapter 4. Thus, there seems indeed to be a hierarchy in how sensitive a structure is to change, but it is not clear what determines the structure of this hierarchy. Here, too, Matras’ (2009) ideas on reducing the processing load may be a promising place to start. Relevant here, too, is that contact-induced structures can be primed, as we showed for Dutch influence on Papiamento. While corpus data and judgment data suggest that the mental representation of Dutch-dominant bilinguals is different from that of speakers less far advanced on the path to shift, or indeed of monolinguals, the priming data show that they also undergo more interference in actual synchronic speech. This in turn, presumably, causes the change, of which these speakers are the carriers, to propagate further.

It is instructive, in this sense, to compare the Turkish and Papiamento findings. While details obviously differ, for both languages we find that the more contact speakers have with Dutch, the more contact-induced change they undergo.

One possible explanation for the spread of a new construction is communicative effectivity. When two languages come in contact, it is possible that the more effective features in one spread into the other, and this will lead to long-term changes. People tend to copy each other’s words and sentence structures in monolingual conversations. If two people speak two languages, they will have more structures to potentially copy. The important thing in a successful conversation is to be able to adapt quickly such that the message is understandable and using the interlocutors’ words and structures is one way to accomplish that. Psycholinguistic
alignment during a conversation between monolingual interlocutors is a well-studied phenomenon, and it has recently also been demonstrated in communication among bilinguals (Bahtina-Jantsikene, 2013a, 2013b; Hartsuiker & Pickering, 2008).

A new variety?

The third issue is about the degree to which all contact-induced changes should be seen as a coherent development. A question that is often asked about contact languages is whether or not it is justified to speak of a new variety of the language in question. Though there is no widely accepted way of defining when a way of speaking can be called a variety, it seems far-fetched at this point to say there is a recognizable variety called ‘Dutch Turkish’. There is too much variation between speakers, even within the group we have identified as ‘Dutch-dominant bilinguals’. In addition, the grammar is very similar to that of TR-Turkish. In other studies, aspects of the Dutch-Turkish way of speaking have been examined that do show quite extensive departures from the Turkish norm, such as codeswitching (Backus, 1996) and the discourse-level domain of subordination (Onar Valk, 2013), but none of the domains studied here point to a variety that is notably different from TR-Turkish, at least not on a grand scale. Given that there is a movement towards more deviation in the Dutch-dominant bilinguals, and that probably more and more speakers in the community will be of this type in the future, the best answer to the question whether there is a new immigrant variety is ‘not yet’.

Gatekeeping

A fourth issue is due to the surprising finding that the Turkish-dominant bilinguals were stricter in their dislike of unconventional, presumably Dutch-Turkish, features. We interpreted this as a sign that these speakers self-identify as gatekeepers of Turkish language and culture, perhaps similar to the network of ‘Europatürken’ described by Keim & Cindark (2003): well-educated young second generation Turks in Germany who avoid codeswitching and attempt to speak both Turkish and German in accordance with monolingual norms. There certainly is widespread anxiety in the Turkish immigrant communities about the loss of linguistic and cultural ties to Turkey, though there is little systematic study (however, see Sevinç 2012).

It is not surprising that languages influence each other in contact situations; it is almost impossible for it to be otherwise. Languages are living mechanisms and are submitted to their own evolutionary process. Neither language purists, nor language chauvinists can stop this development, as eloquently phrased by Fromkin et al. (2003: 456):
“No academy and no guardians of language purity can stem language change, nor should anyone attempt to do so since such change does not mean corruption.”

Converging evidence

Finally, it is useful to reflect on the methodological choices made in this study. We attempted to be innovative in methodological terms. Rather than the traditional reliance on corpus data, or ‘found’ elicited data, these were combined with experimentally elicited data: picture and video descriptions, video retellings, and judgment tasks. Generally, the evidence of both data sources converged, yielding similar conclusions. The first methodological conclusion is, thus, that we can be more confident that the results reflect robust developments in the speech community. However, there were also some interesting deviations. Judgment data showed that some of the types of unconventionality uncovered through corpus analysis are more entrenched than others. This suggests that some changes are further advanced than others, a finding not really visible in the quantitative corpus analysis. Second, the sheer experimental setup of the video retellings allowed the investigation of priming as a determining factor in triggering the use of unconventional constructions. This is not possible with spontaneously recorded natural conversation, at least not in a systematic way. As a result, this study provides strong arguments for the inclusion of experimental methods in the toolkit of contact linguistic research.

Corpus data can give broad indications of what changes are going on in a language and are absolutely needed to study contact-induced language change; experimental data make it possible, however, to focus systematically on specific factors associated with contact-induced language change while controlling for other potential factors. Experimental data can thus contribute to the methodological rigor of the study of contact-induced language change (Gullberg, Indefrey & Muysken, 2009).

One of the most important aspects of experimental research is that other researchers can repeat the experiment with any language and any population, and thereby help validating the experiment. That is why after more than thirty years Bowerman’s Topological Picture Series is still in wide use. Judgment tasks can be done in many different ways, for example in the form of magnitude estimation, and in addition to priming experiments, there are other experimental procedures that can be profitably used, such as sentence repetition, imitation or speech shadowing. All can give direct and indirect indications of whether a particular change has been accepted already by the population under study. Most priming studies are conducted on within-language effects. The novelty of our priming study was that we presented systematic experimental evidence indicating that the same priming mechanism can
also have between-language consequences in the form of contact-induced language change.

### 6.4 Suggestions for further research

In this dissertation I adopted a multi-disciplinary approach to study contact-induced language change. I believe that the most insightful research on language contact combines psycholinguistic and sociolinguistic angles in order to understand the underlying phenomena (Muysken, 1984). Usage-based linguistics provides a way of doing this. The usage-based approach, originally formulated by Langacker (1987), needs two types of data: usage data, as found in corpora, which allows establishing representative frequencies, and cognitive representation data, as found through psycholinguistic experiments, including simple judgment tasks. However, the present study can only be seen as a first step. It calls for various types of additional research.

- First, the database should be extended to include a wider selection of participants, also involving more age groups.
- Second, more psycholinguistic experiments need to be done to see whether unconventional structures can be elicited under controlled conditions.
- Third, regarding priming, it would also be interesting to test priming from Papiamento to Dutch and from Dutch to Dutch, in order to discover whether cross-language priming effects are equally strong as within-language priming effects in this population. To investigate the same question with Papiamento as the target language, it will be important to perform a study on priming from Papiamento to Papiamento.

It would, of course, be ideal if we could also cross-validate our cross-language priming findings with findings from bilingual corpora. This would increase the ecological validity of our results (see also Gullberg, Indefrey & Muysken, 2009).

Another idea for future research would be to include more detailed sociolinguistic background information. The age effect that we found already gives some interesting indications, but more detailed background information on the biographies of our bilingual population would make the picture more complete. Labov (2001: 502) writes:

> “The hypothesis is that most linguistic influence is exerted in early and middle adolescence, before the system stabilizes. The adult behavior of the leaders of linguistic change is taken as a reflection and a consequence of their behavior in their formative years.”
These biographies would also contain more information on the frequency and intensity of contact, worthy of in depth study. Demographic changes are likely to be highly relevant when studying the Turkish and Papiamento communities. For example, intermarriage is starting to be more common, not only between Dutch and Turkish people, but also between Turkish people and spouses from Moroccan or other minority groups.

Finally, register variation has not been studied yet. It is likely that contact effects differ between formal and informal registers. Although I was primarily interested in the spoken language, it would be interesting to analyze the semi-formal written registers used on Facebook or Twitter.
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Nederlandse samenvatting

Mensen zijn voortdurend in beweging, en met hen, hun taalgebruik. Als talen met elkaar in contact komen, is het onvermijdelijk dat ze elkaar beïnvloeden. Het centrale onderwerp van dit proefschrift is dan ook taalverandering als gevolg van taalcontact: hoe en waarom veranderen talen onder invloed van contact met andere talen? Zijn er factoren die de mate en aard van taalverandering kunnen voorspellen?

In vier afzonderlijke studies wordt het taalgebruik van tweetalige onderzocht in twee verschillende taalcombinaties, met behulp van verschillende methoden en steeds in vergelijking met eentalige sprekers. Diverse aspecten worden bekeken van door contact veroorzaakte taalverandering in het taalgebruik van Nederlands-Turkse en Nederlands-Papiamento tweetaligen. Ik onderzoek of er invloed is van het Nederlands op het Turks en Papiamento. De mechanismen van eventuele taalverandering in deze twee verschillende contactsituaties staan centraal. Empirisch ligt de focus vooral op taalverandering in het naamvulsysteem, specifiek het gebruik van de locatief en de accusatief en de zogenaamde ‘datief alternatie’. Het hoofddoel van mijn onderzoek is de taalverandering in individuele sprekers in kaart te brengen door middel van sociolinguïstische corpusgebaseerde analyses en psycholinguïstische experimenten. Het combineren van sociolinguïstisch onderzoek met psycholinguïstische onderzoekstechnieken maakt het mogelijk een vollediger beeld te geven van taalverandering. Specifiek wordt geprobeerd corpusresultaten te valideren met de resultaten van experimentele methodes. De resultaten van hoofdstuk 3 Contact induced language change: A corpus study of case markers in Turkish worden gevalideerd in hoofdstuk 4 Entrenchment of innovative language usage in Dutch-Turkish bilinguals: An experimental study. Het tweede hoofdstuk gaat over Turks en Nederlands zoals het gesproken wordt in Nederland en in Turkije. De hoofdstukken 3 en 4 gaan over Turks zoals het gesproken wordt in Nederland en in Turkije en het vijfde hoofdstuk gaat over Papiamento zoals het gesproken wordt in Nederland en op Aruba.

Deelnemers aan mijn studies waren Turks-Nederlands-sprekende tweetaligen en Papiamento-Nederlands-sprekende tweetaligen die in Nederland wonen, alsmede drie controlegroepen: Nederlandse moedertaalsprekers die geen Turks of Papiamento spreken, Turkse moedertaalsprekers die geen Nederlands spreken en in Antalya woonachtig zijn, en Papiamento-sprekers die op Aruba wonen. De gegevens werden verzameld via sociolinguïstische interviews en een aantal psycholinguïstische experimentele taken.
In hoofdstuk 1 geef ik een overzicht van sociolinguïstische en psycholinguïstische benaderingen van de studie van taalcontact en taalverandering. In dit inleidende hoofdstuk worden de onderzoeksvragen die centraal staan in deze dissertatie uiteengezet en gemotiveerd. Verder wordt er een korte grammaticale schets gegeven van de drie onderzochte talen: Turks, Papiamento en Nederlands. Het Turks heeft bijvoorbeeld naamvallen, het Nederlands en het Papiamento niet, wat tot onderlinge verschillen leidt wat betreft de manier waarop argumentrelaties en ruimtelijke verwijzing gestalte krijgen.

In hoofdstuk 2 geef ik een weergave van een studie naar het gebruik van Turkse en Nederlandse plaatsbepalende topologische voor- en achterzetsels, in het bijzonder het gebruik van locatieve constructies. De groepen die deelgenomen hebben aan deze studie waren Turkse en Nederlandse moedertaalsprekers en Turks-Nederlandse tweetaligen. De participanten kregen de taak om 71 verschillende topologische afbeeldingen te beschrijven in het Turks en in het Nederlands, bijvoorbeeld “De kat ligt op de mat”. Uit de resultaten van dit experiment is gebleken dat er verschillen zijn tussen alle sprekersgroepen, die het gevolg kunnen zijn van contact tussen het Nederlands en het Turks.

In hoofdstuk 3 behandel ik de grammaticale veranderingen in het Turkse naamvalsysteem in het Turks zoals dat in Nederland gesproken wordt. Met behulp van analyses van het Corpus Gesproken Turks wordt het dagelijks taalgebruik van het Turks in Nederland beschreven. De studie richt zich vooral op veranderingen in het gebruik van de accusatief en de datief. Eerder onderzoek heeft aangetoond dat het naamvalsysteem zeer robuust is en niet snel lijkt te veranderen als gevolg van taalcontact. Mijn onderzoek laat zien dat het Turkse naamvalsysteem in het Turks zoals dat in Nederland gesproken wordt, verschilt van het Turks zoals dat gesproken wordt in Turkije, maar ook dat de verschillen niet groot zijn. Deze verschillen kunnen in sommige gevallen het gevolg zijn van Nederlandse beïnvloeding. De gesuggereerde interpretatie van de resultaten is dat de mate van het contact zo intensief is dat zelfs het naamvalsysteem beïnvloeding niet heeft kunnen weerstaan.

In hoofdstuk 4 beschrijf ik een experimentele studie over de verankering en acceptatie van onconventioneel taalgebruik. De participanten moesten 86 conventionele en onconventionele zinnen lezen en aangeven welke zin zij het best vonden klinken. De resultaten geven aan dat het gebruik van onconventionele structuren vaker door de Nederlands-dominante tweetaligen wordt geaccepteerd dan door de eentalige Turkse sprekers. Dit onconventionele taalgebruik van Nederlands-Turkse tweetalige sprekers in Nederland kan worden verklaard door de interactie tussen Nederlands en Turks. De sprekers mengen het Turks en het Nederlands en zo ontstaat er een nieuwe taalvariant met eigen normen, die sommige taalkundigen NederTurks noemen. Men zegt bijvoorbeeld in het NederTurks “Piano oynamak” (‘piano spelen’) of “tren almak” (‘de trein nemen’), letterlijke vertalingen uit het Nederlands. Mijn onderzoek laat zien dat dergelijke constructies door velen
geaccepteerd worden, en dit suggereert dat deze constructies veelvoudig gebruikt worden in het dagelijks leven van meertaligen.


Samenvattend laten zowel het Turks als het Papiamento in Nederland enkele tekenen van taalverandering zien als gevolg van Nederlandse invloeden. Sprekers gebruiken ‘Nederlandsachtige’ constructies. Andersom komt ook voor, hoewel dit voor het Papiamento hier niet onderzocht is: dezelfde sprekers gebruiken ook ‘Turksachtige’ en wellicht ‘Papiamentoachtige’ constructies in het Nederlands. Als gevolg van taalcontact kunnen nieuwe talen of variëteiten van een bestaande taal ontstaan, zoals het beschreven NederTurks laat zien. De mens bezit een indrukwekkend vermogen om zich aan te passen aan zijn of haar omgeving, en dat laat zich ook zien in taal. Verandering is een natuurwet van menselijk gedrag, die we ook in taal zien. Dit hoeft geen verbazing te wekken, het is eigenlijk de normaalste zaak van de wereld.
Yaşadığımız dünya sürekli bir değişim içindeidir ve bu değişim insanların dil kullanımını da doğal olarak değiştirir. Yani iki dil arayışı içindeki dillerin birbirleriyle iletişim ve birbirlerini etkilemeleri kaçınılmaz olur. Bu kitabın ana teması da diller arasında var olan bu iletişimi, etkileşimi ve dil değişiminin analiz edip araştırmaktır.


Dil bilimsel veriler, sosyolojik röportajlar (dilsel ve kültürel tercih, sosyal çevreye dair sorular içeren sohbet tarzında görüşmeler) ve çeşitli psikolojik deneylerle elde edilmiştir. Kitabin 2. 3. ve 4. bölümleri Türkçe ve Hollanda konuşan kişilerin dil kullanımları ile ilgiliidir. 5. bölüm ise Papiamento ve Hollanda konuşan kişilerin dil kullanımları ile ilgildir.

Introduction: Multilingualism and cross-linguistic influence:
Birinci bölümde çok dillilik nedir, birden fazla dil konuşmanın insanlara kazandırıldığı artılar nelerdir gibi sorular ve genel dil biliminde kullanılan kavramlar açıklanmıştır. Ruh dil bilimin sosyal dilin hangi yöntemleri kullanarak neleri araştırığını belirtmiştir. Ayrıca dil değişimi hakkında yapılan bilimsel sonuçlar elde etmeye yönelik farklı teorik araştırma yöntemleri kullanın çalışmalarının genel bir özet verilmiştir. Ayrıca bu bölümde üzerinde araştırma yapılan Türkçe, Papiamento ve Hollanda'nın önemli dil bilgisi kuralları kısaca anlatılmıştır.
The expression of spatial relationships in Turkish/Dutch bilinguals:
İkinci bölümde Türkçe ve Hollanda'da kullanılan yer belirteçleri ve Türkçe'de ismin -de halı, *restim betimleme* yöntemiyle incelenmiştir. Araştırma sonuçlarında tek dil ve iki dil konuşan katılımcıların yer belirteçlerini farklı kullandıkları gözlemlenmiştir.

Contact induced language change: A corpus study of case markers in Turkish:

Entrenchment of innovative language usage in Dutch/Turkish bilinguals: An experimental study:
Dördüncü bölümde, Hollanda Türkçesinde kullanılan yeni terimlerin veya bazı kalıplaşmış cümle öbeklerinin dile ne kadar yerleştigi deneysel bir yöntemle, *cümle değer lendirmesi*, incelenmiştir. Sonuçta Türkiye Türkçesinde olmayan ama Hollanda Türkçesinde kabul gören günlük konuşmalarda çok sık kullanılan yeni terim ve cümle öbeklerinin daha çok Hollanda konuşan katılımcılardan kabul gördüğü ve kullanıldığı gözlemlenmiştir.

Cross-linguistic structural priming as a mechanism of language change: Evidence from Papiamento-Dutch bilinguals in Aruba and the Netherlands:

Resúmen na Papiamento

Hende ta kambia, asina tambe e lengua ku nan ta papia ta kambia. E tema di e obra aki ta kambio di lengua dor ku nan ta bin den kontakto ku otro lengua. E obra aki ta kontené kuater investigashon tokante di uso di lengua dor di hende ku ta papia un òf dos lengua. Por ehempel, nos ta wak si Papiamento ta kambia dor di influensha di Hulandes, òf visa versa.

Tin diferente aspekto di kambio di lengua bou di influensha di otro lengua, anto nos ta investigá na riba diferente manera. Por ehempel, ta wak kon hende ku ta biba na Aruba ta papia Papiamento. Tambe nos ta wak kon hende ku ta biba na Hulanda ta papia Papiamento. Nos ta hasi tèst pa mira si hende ta kambia nan manera di papia Papiamento ora nan ta bin den hopi kontakto ku Hulandes. Asina tambe ta hasi diferente tipo di tèst i investigashon ku hende ku ta papia Turko.

Kortiku bisá, Papiamento i Turko tur dos ta mustra seña di kambio dor di influensha di lengua Hulandes.
Hülya Şahin was born in 1965 in Sivas, Turkey. She obtained her Master degree in the Department of Language and Culture Studies at Tilburg University in 1999. For 10 years she worked as a Turkish language teacher at the Nova College in Amsterdam and as a test item developer at CITO. Since 1989 she has been a licensed translator and interpreter in Turkish and Dutch. From 2003 to 2010 she worked as a research assistant in the Dynamics of Multilingual Processing Group at the Max Planck Institute for Psycholinguistics in Nijmegen. During this time she started her own research project under the supervision of Peter Indefrey. Later, she started an external PhD project at Tilburg University, under the supervision of Ad Backus. She continued her PhD project in the Languages in Contact group headed by Pieter Muysken at the Centre for Language Studies at Radboud University, which has resulted in this dissertation.

Her research focuses on contact-induced language change in Turkish/Dutch and Papiamento/Dutch. Her main research interests include multilingualism, bilingual language production, psycholinguistics, sociolinguistics, cognitive linguistics, and corpus linguistics. An overall concern not covered in the dissertation is the maintenance of minority languages and cultures.